CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. R2-2002-0073
NPDES PERMIT NO. CA0037664

WASTE DISCHARGE REQUIREMENTS FOR:

CITY AND COUNTY OF SAN FRANCISCO
SOUTHEAST WATER POLLUTION CONTROL PLANT,
NORTH POINT WET WEATHER FACILITY, AND
BAYSIDE WET WEATHER FACILITIES
SAN FRANCISCO, SAN FRANCISCO COUNTY

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FINDINGS

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

1. *Discharger and Permit Applications.* The City and County of San Francisco, hereinafter called the Discharger, has applied to the Board for reissuance of waste discharge requirements and permits to discharge treated wastewater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES) for the Southeast Water Pollution Control Plant (NPDES Permit No. CA 0037664) and for the Bayside Wet Weather Facilities including the North Point Wet Weather Facility (NPDES Permit No. CA 0038610).

2. Since the permits CA0037664 and CA 0038610 regulate two different components of the same Bayside Wastewater treatment system, this permit combines the two NPDES permits.

3. ***Combined Sewer.*** The Discharger collects wastewater in a combined sewer system. This means the domestic sewage, industrial wastewater, and stormwater runoff are collected in the same pipes (combined sewer). Most other communities in California have a separated sewer system: one set of pipes for domestic sewage and industrial waste and another set for stormwater. The City has complied with federally mandated upgrades to secondary level treatment of its dry weather wastewater treatment plants to comply with the Clean Water Act as required of Publicly Owned Treatment Works (POTW). The combined sewer system facilities are not POTWs subject to the secondary treatment regulations of 40 Code of Federal Regulation (CFR) Section 133. The U.S. EPA's Office of General Counsel has classified facilities that treat combined sewer overflows as point sources subject to Section 301(b)(1)(A) of the Clean Water Act. Under wet weather conditions, the City's combined sewer system is regulated under the Federal Combined Sewer Overflow Control Policy, (59FR 18688). Combined sewer system wet weather facilities must provide storage capacity for wet weather flows, maximize flow to treatment facilities, and minimize combined sewer overflows.

Facilities Description

4. ***Facility Location and Description***
   a. The Southeast Water Pollution Control Plant is located at 750 Phelps Street in San Francisco. It is a secondary wastewater treatment plant with a peak secondary treatment capacity of 150 million gallons per day (mgd). During wet weather, the Southeast wet weather facilities are engaged to provide primary treatment to an additional 100 mgd of mixed stormwater and sewage.

b. The North Point Wet Weather Facility is located at 111 Bay Street in San Francisco. It operates only during wet weather and provides primary level treatment to combined stormwater and wastewater with a peak primary treatment capacity of 150 mgd. It is not a publicly owned treatment works (POTW) as defined in 40 Code of Federal Regulations (CFR) 122.2.

c. Bayside Wet Weather Storage/Transport and Diversion Structures consist of a series of interconnected large underground rectangular tanks or tunnels that ring San Francisco like a moat, and 29 overflow structures. These storage/transport structures provide storage and treatment equivalent to primary treatment for additional stormwater and wastewater during wet weather conditions. When capacities at the wastewater treatment plants, wet weather facilities and storage/transport structures are exceeded, the excess flow is discharged into the Bay via the 29 shoreline overflow structures.

d. The locations of the above facilities are shown in Attachments A and B.

5. ***Discharge System Descriptions***

   a. Wet Weather Day:
      i. Definition: Wet weather day is defined as any day in which one of the following conditions exists as a result of rainfall:
         1. Instantaneous influent flow to the Southeast Water Pollution Control Plant exceeds 110 mgd; or
         2. The average influent flow concentration of TSS or BOD is less than 100 mg/L, or
         3. North Shore storage/transport wastewater elevation exceeds 100 inches.

   b. Dry Weather Day:
      i. Definition: any day in the year, that is not defined as a wet weather day.
      ii. During dry weather, all the wastewater collected is treated at the Southeast Water Pollution Control Plant.

   c. The Discharger treats domestic and industrial wastewater from the Southeast and North Shore areas of San Francisco, the Bayshore Sanitary District, City of Brisbane, and a small part of the North San Mateo County Sanitation District.

6. The Discharger presently discharges an average dry weather flow of 68 mgd from the Southeast Water Pollution Control Plant. Wet weather flow is maximized at the Southeast Water Pollution Control Plant at 250 mgd and at 150 mgd from the North Point Wet Weather Facility.

7. The Discharger was previously regulated by Waste Discharge Requirements in Order Nos. 94-149, 95-039, and 96-116, adopted by the Board on October 19, 1994, February 15, 1995, and August 21, 1996, respectively. In addition, the SWRCB adopted Order No. WQ 95-04 in September 1995, which remanded portions of Order No. 94-149 based on an appeal of Order No. 94-149 by the Discharger. In particular, WQ 95-04 effectively removed final effluent limitations for aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mercury, PAHs, PCBs (total), TCDD equivalents, toxaphene, and tributyltin which were not supported by the Fact Sheet and findings.

8. The U.S. Environmental Protection Agency (U.S. EPA) and the Board have classified the Southeast Water Pollution Control Plant, the North Point Wet Weather Facility, and the Bayside Wet Weather Facilities as major discharges.

Treatment Process Description

9. ***Treatment Process.***
   a. **Southeast Water Pollution Control Plant:** The treatment process consists of a headworks with coarse and fine bar screens, primary sedimentation tanks, pure oxygen aeration basins, secondary clarifiers and chlorine contact basins (chlorination and dechlorination). The treatment process schematic diagrams for the Southeast Water Pollution Control Plant are included as Attachment C of this Order.
   b. **North Point Wet Weather Facility:** The treatment process consists of primary sedimentation, clarification, disinfection and dechlorination. It treats exclusively wet weather flow consisting of a combination of domestic and industrial wastewater mixed with stormwater runoff. The treatment level at this wet weather facility is equivalent to the minimum treatment specified by the *Combined Sewer Overflow Control Policy* (59 FR 18688) for the "Presumption" approach as defined in Finding 32.
   c. **Bayside Wet Weather Storage/Transport and Diversion Structures:** The treatment process consists of a series of baffles and weirs that are designed to remove settleable solids and floatables. The treatment is equivalent to the minimum treatment specified by the *Combined Sewer Overflow Control Policy* for the "Presumption" approach as defined in Finding 32.

10. ***Discharge Process***
   a. **Southeast Water Pollution Control Plant:**
   The Southeast Water Pollution Control Plant has the capacity to treat up to 250 mgd of combined stormwater and wastewater during wet weather conditions. Up to 150 mgd receive secondary treatment; the remaining 100 mgd receive primary treatment. The entire volume of treated stormwater and wastewater is disinfected prior to discharge. During dry weather conditions, all flow is discharged through the Southeast Water Pollution Control Plant deep water outfall at Pier 80 (E-001). At full wet weather capacity, the discharge via the deep water outfall at Pier 80 (E-001) is maximized to 110 mgd of a blended primary and secondary treated effluent. The remaining 140 mgd receive full secondary treatment and are discharged via the Quint St. shallow water outfall into Islais Creek (E-002).
   b. **North Point Wet Weather Facility:** The North Point Wet Weather Facility is operational only during wet weather and provides primary treatment to combined stormwater and wastewater flow up to 150 mgd. Treated combined stormwater and wastewater (Waste E-003) is simultaneously discharged from the North Point Wet Weather Facility into San Francisco Bay through four deep water outfalls, two of which terminate at the end of Pier 33 (E-003 & E-004), and two of which terminate at the end of Pier 35 (E-005 & E-006). The entire volume of treated stormwater and wastewater is disinfected and dechlorinated prior to discharge.
   c. **Bayside Wet Weather Storage/Transport and Diversion Structures:**
      i. The storage/transport structures operate to transport combined sewage and street runoff to the Southeast Water Pollution Control Plant during dry weather periods. During wet weather, these structures provide storage for additional stormwater and wastewater flow, while pumping facilities continue to transfer flow to the treatment facilities. In the event that the capacities of the treatment plant, wet weather facilities and storage structures are exceeded, the combined stormwater and wastewater receive equivalent of primary treatment in the transport structures and are discharged into San Francisco Bay via one of the twenty-nine shoreline Combined Sewer Overflow structures (CSO 009 to CSO 043).
      ii. Discharges from these structures occur only when the storm flow exceeds the combined storage capacity of the storage/transports and the capacity of the pumping facilities to transfer flows to the treatment plant and wet weather facilities. The outfalls associated with these structures range in size from 18' diameter pipes to quadruple 8'3" X 9'6" box culverts.

11. ***Discharge Locations***. The discharge locations are as follows and as shown in Attachments A & B:

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste 001 **Discharge E-001** Southeast Water Pollution Control Plant (Pier 80 Outfall)	810 feet from shore/ 42 feet below mean lower low water	Lower San Francisco Bay	37° 44' 58"	122° 22' 22"
Waste 002 **Discharge E-002** Southeast Water Pollution Control Plant (Quint Street Outfall)	Shoreline Outfall	Islais Creek	37° 44' 50"	122° 23' 13"
Waste 003 **Discharges E-003-006** North Point Wet Weather Facility (Discharges 003 and 004, at Pier 33 and Discharges 005 and 006, at Pier 35)	Dual outfalls both 800 feet from shore / 18 feet below mean lower low water	Central San Francisco Bay	37° 48' 25" & 37° 48' 36"	122° 24' 11" & 22° 24' 20"
Waste 007 **Discharge E-007** Oceanside Water Pollution Control Plant (Southwest Ocean Outfall)	This discharge is not regulated by this permit and is only incorporated for reference. It is regulated in permit number CA0037681 City and County of San Francisco Oceanside Water Pollution Control Plant and Westside Wet Weather Combined Sewer System.			
Combined Sewer Overflow Sites				
Waste CSO 001 **Discharge CSW-001**	These discharges are not regulated by this permit and are only incorporated for reference. They are regulated in permit number CA0037681 City and County of San Francisco Oceanside Water Pollution Control Plant and the Westside Wet Weather Combined Sewer System.			
Waste CSO 002 **Discharge CSW-002**				
Waste CSO 003 **Discharge CSW-003**				
Waste CSO 004 **Discharge CSW-004**				
Waste CSO 005 **Discharge CSW-005**				
Waste CSO 006 **Discharge CSW-006**				
Waste CSO 007 **Discharge CSW-007**				
Waste CSO 008	Discharge Eliminated			
Waste CSO 009 **Discharge CSN-009** Baker Street	Shoreline Outfall	Marina Beach North Shore Drainage Basin	37° 48' 29"	122° 26' 48"
Waste CSO 010 **Discharge CSN-010** Pierce Street	Shoreline Outfall	Marina Beach North Shore Drainage Basin	37° 48' 25"	122° 26' 24"

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste CSO 011 **Discharge CSN-011** Laguna Street	Shoreline Outfall	Yacht Harbor #2 North Shore Drainage Basin	37° 48' 22"	122° 25' 53"
Waste CSO 012	Discharge Eliminated			
Waste CSO 013 **Discharge CSN-013** Beach Street	Shoreline Outfall	Pier 39 North Shore Drainage Basin	37° 48' 30"	122° 24' 24"
Waste CSO 014	Discharge Eliminated			
Waste CSO 015 **Discharge CSN-015** Sansome Street	Shoreline Outfall	Pier 31 North Shore Drainage Basin	37° 48' 24"	122° 24' 11"
Waste CSO 016:	Discharge Eliminated			
Waste CSO 017 **Discharge CSN-017** Jackson Street	Shoreline Outfall	Pier 9 North Shore Drainage Basin	37° 47 54"	122° 23' 41"
Waste CSO 018: **Discharge CSC-018** Howard Street	Shoreline Outfall	Pier 14 Central Drainage Basin	37° 47' 35"	122° 23' 24"
Waste CSO 019 **Discharge CSC-019** Brannan Street	Shoreline Outfall	Pier 32 Central Drainage Basin	37° 47' 7"	122° 23' 24"
Wastes CSO 020 & CSO 021	Discharges Eliminated			
Waste CSO 022 **Discharge CSC-022** Third Street	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 38"	122° 23' 22"
Waste CSO 023 **Discharge CSC-023** Fourth Street North	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 32"	122° 23' 29"
Waste CSO 024 **Discharge CSC-024** Fifth Street North	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 26"	122° 23' 38"
Waste CSO 025 **Discharge CSC-025** Sixth Street North	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 19"	122° 23' 46"
Waste CSO 026 **Discharge CSC-026** Division Street	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 13"	122° 23' 51"
Waste CSO 027 **Discharge CSC-027** Sixth Street South	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 17"	122° 23' 42"
Waste CSO 028 **Discharge CSC-028** Fourth Street South	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 30"	122° 23' 28"
Waste CSO 029 **Discharge CSC-029** Mariposa Street	Shoreline Outfall	Central Basin Central Drainage Basin	37° 45' 53"	122° 23' 7"

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste CSO 030 Discharge CSC-030 20th Street	Shoreline Outfall	Central Basin Central Drainage Basin	37° 45' 40"	122° 22' 48"
Waste CSO 030A Discharge CSC-030A 22nd Street	Shoreline Outfall	Central Basin Central Drainage Basin	37° 45' 28"	122° 22' 49"
Waste CSO 031 Discharge CSC-031 Third Street North	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 52"	122° 23' 10"
Waste CSO 031A Discharge CSC-031A Islais Creek North	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 52"	122° 23' 15"
Waste CSO 032 Discharge CSC-032 Marin Street	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 55"	122° 23' 27"
Waste CSO 033 Discharge CSC-033 Selby Street	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 52"	122° 23' 27"
Waste CSO 034	Discharge Eliminated			
Waste CSO 035 Discharge CSC-035 Third Street South	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 50"	122° 23' 10"
Waste 036	Discharge Eliminated			
Waste CSO 037 Discharge CSS-037 Evans Avenue	Shoreline Outfall	India Basin Southeast Drainage Basin	37° 44' 9"	122° 22' 26"
Waste CSO 038 Discharge CSS-038 Hudson Avenue	Shoreline Outfall	India Basin Southeast Drainage Basin	37° 44' 0"	122° 22' 26"
Waste CSO 039	Discharge Eliminated			
Waste CSO 040 Discharge CSS-040 Griffith Street South	Shoreline Outfall	Yosemite Canal Southeast Drainage Basin	37° 43' 23"	122° 22' 56"
Waste CSO 041 Discharge CSS-041 Yosemite Avenue	Shoreline Outfall	Yosemite Canal Southeast Drainage Basin	37° 43' 26"	122° 23' 8"
Waste CSO 042 Discharge CSS-042 Fitch Street	Shoreline Outfall	South Basin Southeast Drainage Basin	37° 43' 20"	122° 22' 55"
Waste CSO 043 Discharge CSS-043 Sunnydale Avenue	Shoreline Outfall	Candlestick Cove Southeast Drainage Basin	37° 44' 50"	122° 23' 13"

CSN = North Drainage Basin
CSC = Central Drainage Basin
CSS = Southeast Drainage Basin

CSW = Westside Drainage Basin

12. ***Solids Treatment, Handling and Disposal.***
    a. **Southeast Water Pollution Control Plant:** Primary and secondary sludge is processed via anaerobic digestion. Prior to digestion, the secondary sludge is thickened. The digested and dewatered sludge is beneficially re-used as alternative daily cover at a permitted landfill sites or is used as land application at a permitted site.
    b. **North Point Wet Weather Facility:** Primary sludge is directed to the Southeast Water Pollution Control Plant for treatment.
    c. **Bayside Wet Weather Storage/Transport and Diversion Structures:** All solids which settle out in the storage/transport structures are flushed to the Southeast Water Pollution Control Plant after the rainstorm subsides.

Combined Sewer Overflow

13. U.S. EPA's Office of General Counsel has classified facilities that treat combined sewer overflows as point sources subject to Section 301(b)(1)(A) of the Clean Water Act. Thus, they are not Publicly Owned Treatment Works (POTWs) subject to the secondary treatment regulations of 40 Code of Federal Regulations (CFR) Section 133. This opinion is supported by subsequent case law (646 F.2d 568(1980); Montgomery Environmental Coalition V. Costle).

14. Wet weather flows are intermittent in nature and subject to a high degree of variability throughout the wet weather season. Based on past rainfall records, the North Point Wet Weather Facility will be operated approximately 30-40 times per wet season, with the duration of each operation expected to average approximately 12 hours at a maximum flow rate of approximately 150 mgd. The sanitary fraction in controlled overflows averages 6% of the total flow.

15. In 1971 and 1974, the Discharger developed the "Master Plan for Wastewater Management" and "Master Plan Environmental Impact Statement and Report", respectively. These documents set the groundwork for the Discharger's wastewater control program by identifying the need for upgraded treatment levels and the principle of storing accumulated combined sewage flow during wet weather for later treatment at the wastewater treatment plants.

16. In 1979, the Board issued Order No. 79-67 for the wet-weather facilities. This order found that a long term average of 4 overflows per year for diversion structures CSN-009 through CSN-017 (North Shore Drainage Basin), a long term average of 10 overflows per year for diversion structures CSC-018 through CSC-035 (Central Basin Drainage), and a long term average of 1 overflow per year for diversion structures CSS-037 through CSS-043 (Southeast Drainage Basin) would provide adequate overall protection of beneficial uses. This conclusion is based on evidence presented at the public meeting concerning the costs of different types of facilities necessary to achieve specific overflow frequencies, the water quality benefits derived from construction of these facilities, and the effects of the combined sewer overflows to existing beneficial uses. Wet weather flows are governed under compliance with the nine minimum controls contained in the *Combined Sewer Overflow Control Policy* (59FR 18688). The Discharger is responsible for operating wet weather facilities, storage, transport and pumping facilities at maximum efficiency in order to maximize treatment of wet weather flow. The Discharger has successfully designed and completed construction of its wet weather facilities based upon criteria contained in Order No. 79-67. Operation and implementation of these facilities satisfies CSO Control Policy requirements. The system was designed and built based upon historical rainfall data to not exceed the overflow frequencies specified in Order No. 79-67. As specified in Order No. 79-67 and subsequent permits for these facilities, these long term design criteria will not be used to determine compliance or non-compliance. The Board recognizes that

some years are wetter than others and may contribute more flow than anticipated in the system design criteria. The Discharger is required to maximize treatment and shall be considered in compliance as defined by adherence to the Wet Weather Effluent Performance Criteria defined in this permit and the Operations Plan and other permit conditions.

17. The storage and transport structures, which surround the City like a moat, were designed with the capacity to capture and hold wet weather flows for later treatment and prevent shoreline overflows. The system capacity was measured, designed, and constructed based upon a previous 70 year rainfall history pattern of California and the San Francisco Bay Area to capture flows as necessary to achieve the criteria specified in Order No. 79-67. In 1997, the Discharger completed the major components of the Wastewater Master Plan, and is in compliance with the Federal Combined Sewer Overflow Control Policy. Citywide, this construction program cost more than $1.4 billion dollars over a twenty-year period and represents an expenditure of nearly $1,900 for every resident in the City of San Francisco. Approximately $1 billion of the cost represents facilities needed to control wet weather flows. The remaining costs were for treatment upgrades to all facilities and construction of the Oceanside Water Pollution Control Plant. The Oceanside Water Pollution Control Plant collects and treats the wastewater and stormwater for the western half of the City and County of San Francisco, excluding the Presidio. This permit does not regulate the discharges from the Oceanside Water Pollution Control Plant. Discharges associated with the Oceanside Water Pollution Control Plant are regulated under NPDES Permit No. CA0037681.

Regional Monitoring Program

18. On April 15, 1992, the Board adopted Resolution No. 92-043 directing the Executive Officer to implement the Regional Monitoring Program (RMP) for the San Francisco Bay. Subsequent to a public hearing and various meetings, Board staff requested major permit holders in this region, under authority of section 13267 of California Water Code, to report on the water quality of the estuary. These permit holders, including the Discharger, responded to this request by participating in a collaborative effort, through the San Francisco Estuary Institute (formerly the Aquatic Habitat Institute). This effort has come to be known as the San Francisco Bay Regional Monitoring Program for Trace Substances. This Order specifies that the Discharger shall continue to participate in the RMP, which involves collection of data on pollutants and toxicity in water, sediment and biota of the estuary. Annual reports from the RMP are referenced elsewhere in this Order.

Applicable Plans, Policies and Regulations

Basin Plan

19. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on June 21, 1995. This updated and consolidated plan represents the Board's master water quality control planning document. The State Water Resources Control Board (SWRCB) and the Office of Administrative Law approved the revised Basin Plan on July 20, 1995 and November 13, 1995, respectively. A summary of the regulatory provisions is contained in Title 23 of the California Code of Regulations, Section 3912. The Basin Plan identifies beneficial uses and water quality objectives for waters of the State in the Region, including surface waters and ground waters. The Basin Plan also identifies discharge prohibitions intended to protect beneficial uses. Section 4 of the Basin Plan states that "The Regional Board intends to implement the federal CSO Control Policy for the combined sewer overflows from the City and County of San Francisco". This Order implements the plans, policies and provisions of the Board's Basin Plan.

Beneficial Uses

20. *Central San Francisco Bay:* Beneficial uses of central San Francisco Bay and contiguous water, as identified in the Basin Plan and based on known uses of the receiving waters in the vicinity of the discharges, are:

- Commercial, and Sport Fishing
- Estuarine Habitat
- Industrial Service Supply
- Industrial Process Supply
- Fish Migration
- Fish Spawning
- Navigation
- Preservation of Rare and Endangered Species
- Water Contact Recreation
- Noncontact Water Recreation
- Shellfish Harvesting
- Wildlife Habitat

21. *Lower San Francisco Bay:* Beneficial uses of Lower San Francisco Bay and contiguous water, as identified in the Basin Plan and based on known uses of the receiving waters in the vicinity of the discharges, are:

    - Commercial, and Sport Fishing
    - Estuarine Habitat
    - Industrial Service Supply
    - Fish Migration
    - Navigation
    - Preservation of Rare and Endangered Species
    - Water Contact Recreation
    - Noncontact Water Recreation
    - Shellfish Harvesting
    - Wildlife Habitat

Combined Sewer Overflow Control Policy (CSO Policy)

22. On April 11, 1994, U.S. EPA adopted the *Combined Sewer Overflow (CSO) Control Policy* (59 Federal Resister 18688-18698). This policy became part of the Clean Water Act in December 2000 and establishes a consistent national approach for controlling discharges from CSOs to the nation's water. Using the NPDES permit program, the policy initiates a two-phased process with higher priority given to more environmentally sensitive areas. During the first phase, the permittee is required to implement the nine minimum controls listed in later findings. These controls constitute the technology-based requirements of the Clean Water Act as applied to combined sewer facilities (best conventional treatment, BCT, and best available treatment, BAT). These nine minimum controls can reduce the frequency of CSOs and reduce their effects on receiving water quality. During the second phase, the permittee is required to continue the implementation of the nine minimum controls, properly operate and maintain the completed CSO controls in accordance with the operational plan, and implement the post-construction monitoring program.

State Implementation Policy (SIP)

23. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (also known as the State Implementation Policy or SIP) on March 2, 2000 and the Office of Administrative Law (OAL) approved the SIP on April 28, 2000. The SIP applies to discharges of toxic pollutants in the inland surface waters, enclosed bays and estuaries of California subject to regulation under the State's Porter-Cologne Water Quality Control

Act (Division 7 of the Water Code) and the federal Clean Water Act. The SIP establishes implementation provisions for priority pollutant criteria promulgated by the U.S. EPA through the National Toxics Rule (NTR) and California Toxics Rule (CTR), and for priority pollutant objectives established by the Regional Water Quality Control Boards (RWQCBs) in their water quality control plans (basin plans). The SIP also establishes monitoring requirements for 2,3,7,8-TCDD equivalents, chronic toxicity control provisions, and Pollutant Minimization Program.

24. The SIP does not apply to discharges of toxic pollutants from combined sewer overflows. Therefore, the requirements of the SIP only apply when the Discharger is operating in the "dry weather" mode, and only to discharges through outfall E-001.

California Toxics Rule (CTR)

25. On May 18, 2000, the U.S. EPA published the *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (Federal Register, Volume 65, Number 97, 18 May 2000, or the CTR). The CTR specified water quality standards for numerous pollutants, of which some are applicable to the Discharger's receiving waters.

Other Regulatory Bases

26. Water quality objectives and effluent limitations in this permit for E-001 during dry weather are based on the SIP; the plans, policies and water quality objectives and criteria of the Basin Plan; CTR; *Quality Criteria for Water* (U.S EPA 440/5-86-001, 1986 and subsequent amendments, "Gold Book"); applicable Federal Regulations (40 CFR Parts 122 and 131); NTR; December 10, 1998 "National Recommended Water Quality Criteria" compilation (Federal Register Vol. 63, No. 237, pp. 68354-68364); and Best Professional Judgment (BPJ) as defined in the Basin Plan. Where numeric effluent limitations have not been established or updated in the Basin Plan, 40 CFR 122.44(d) specifies that water quality based effluent limits may be set based on criteria and supplemented where necessary by other relevant information to attain and maintain narrative water quality criteria to fully protect designated beneficial uses. Discussion of the specific bases and rationale for effluent limits are given in the associated Fact Sheet for this Permit, which is incorporated as part of this Order.

27. Other U.S. EPA guidance documents upon which BPJ was developed for all the discharges in this permit may include in part:

- Region 9 Guidance For NPDES Permit Issuance, February 1994;
- Technical Support Document for Water Quality Based Toxics Control (March 1991) (TSD);
- Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria, October 1, 1993;
- Whole Effluent Toxicity (WET) Control Policy, July 1994;
- National Policy Regarding Whole Effluent Toxicity Enforcement, August 14, 1995;
- Clarifications Regarding Flexibility in 40 CFR Part 136 Whole Effluent Toxicity (WET) Test Methods, April 10, 1996;
- Regions 9 & 10 Guidance for Implementing Whole Effluent Toxicity Programs Final, May 31, 1996;
- Draft Whole Effluent Toxicity (WET) Implementation Strategy, February 19, 1997.
- *Combined Sewer Overflows, Guidance For Nine Minimum Controls*, EPA 832-B-95-003, May 1995
- *Manual, Combined Sewer Overflow Control,* EPA/625/R-93/007, September 1993
- *Combined Sewer Overflows, Guidance For Permit Writers*, EPA 832-B-95-008, September 1995
- *Combined Sewer Overflows, Guidance For Long-Term Control Plan*, EPA 832-B-95-002, September 1995

Basis for Effluent Limitations

General Basis

28. **Federal Water Pollution Control Act**. Effluent limitations and toxic effluent standards are established pursuant to sections 301 through 305, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharges herein.

29. The secondary technology based limits for conventional pollutants for dry weather discharges at E-001 are established in accordance with the Basin Plan and 40 CFR 125. During wet weather, the CSO Control Policy requirements together with technology based limits based on past performance for discharges at E-001, E-002, and E-003 replaces the secondary technology limits.

CSO Policy Requirements

30. The nine minimum controls listed in the CSO Policy are as follows:

    a. Conduct proper operation and regular maintenance programs for the combined sewer system (CSS) and the CSO outfalls;
    b. Maximize use of the collection system for storage;
    c. Review and modify pretreatment programs to ensure that CSO impacts are minimized;
    d. Maximize flow to the POTW for treatment;
    e. Prohibit CSOs during dry weather;
    f. Control solids and floatable materials in CSOs;
    g. Develop and implement pollution prevention programs that focus on contaminant reduction activities;
    h. Notify the public; and
    i. Monitor to effectively characterize CSO impacts and the efficacy of CSO controls.

31. The Discharger implemented the nine minimum controls as required by the CSO Policy.

32. In conformance with the CSO Policy, the Discharger developed a long-term control plan to select CSO controls to comply with water quality standards, based on consideration of the Discharger's financial capability. The purpose of this long-term control plan is to comply with the water quality requirements of the Clean Water Act. The CSO Policy provides two alternative approaches – the "demonstration" and the "presumption" approaches – that provide communities with targets for CSO controls that achieve compliance with the Act, particularly protection of water quality and designated beneficial uses. The Discharger's program, which is already complete, complies with the presumption approach. This approach is defined in the CSO Policy as follows:

    "'*Presumption' Approach*
    A program that meets any of the criteria listed below would be presumed to provide an adequate level of control to meet the water quality-based requirements of the CWA, provided the permitting authority determines that such presumption is reasonable in light of the data and analysis conducted in the characterization, monitoring, and modeling of the system and the consideration of sensitive areas described above. These criteria are provided because data and modeling of wet weather events often do not give a clear picture of the level of CSO controls necessary to protect WQS [Water Quality Standards].

    i. No more than an average of four overflow events per year, provided that the permitting authority may allow up to two additional overflow events per year. For the purpose of this criterion, an overflow event is one or more overflows from a CSS[Combined Sewer System] *as the result of a precipitation event that does not receive the minimum treatment specified below; or*

ii. *The elimination or the capture for treatment of no less than 85% by volume of the combined sewage collected in the CSS during precipitation events on a system-wide annual average basis; or*

iii. *The elimination or removal of no less than the mass of the pollutants, identified as causing water quality impairment through the sewer system characterization, monitoring, and modeling effort, for the volumes that would be eliminated or captured for treatment under paragraph ii above.*

Combined sewer overflows remaining after implementation of the nine minimum controls and within the criteria specified at II.C.4.a.i or ii, should receive a minimum of:

- *Primary clarification (Removal of floatables and settleable solids may be achieved by any combination of treatment technologies or methods that are shown to be equivalent to primary clarification.);*
- *Solids and floatables disposal; and*
- *Disinfection of effluent, if necessary, to meet WQS, protect designated uses and protect human health, including removal of harmful disinfection chemical residuals, where necessary."*

33. The recently completed San Francisco Wastewater Control Program exceeds the specifications of the Presumption Approach. San Francisco captures and provides treatment to 100% of the combined sewer flows rather than the 85% identified in option ii. As defined in the CSO Policy, San Francisco has no remaining untreated overflow events; the overflows that occur in San Francisco have received treatment (within the storage/transports) consisting of removal of floatables and settleable solids.

34. The wet weather conditions in this Order require continued implementation of the long-term plan such that pollutant removal is maximized.

Applicable Water Quality Objectives

35. The water quality objectives (WQO) applicable to the receiving water of this Discharger are from the Basin Plan, the CTR, and the NTR.

    a. The Basin Plan specifies numeric WQOs for 10 priority toxic pollutants, as well as narrative WQOs for toxicity and bioaccumulation in order to protect beneficial uses. The pollutants for which the Basin Plan specifies numeric objectives are arsenic, cadmium, chromium (VI), copper in freshwater, lead, mercury, nickel, silver, zinc, and cyanide (see also c. below). The narrative toxicity objective states in part "[a]ll waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms." The bioaccumulation objective states in part "[c]ontrollable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life." Effluent limitations and provisions contained in this Order are designed to implement these objectives, based on available information.

    b. The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to inland surface waters and enclosed bays and estuaries such as here, except that where the Basin Plan's Tables 3-3 and 3-4 specify numeric objectives for certain of these priority toxic pollutants, the Basin Plan's numeric objectives apply over the CTR (except in the South Bay south of the Dumbarton Bridge).

    c. The NTR established numeric aquatic life criteria for selenium, and numeric aquatic life and human health criteria for cyanide for waters of San Francisco Bay upstream to and including

Suisun Bay and the Sacramento-San Joaquin Delta. This includes the receiving water for this Discharger.

Basin Plan Receiving Water Salinity Policy

36. The Basin Plan states that the salinity characteristics of the receiving water shall be considered in determining the applicable water quality objectives. Freshwater objectives apply to discharges to waters both outside the zone of tidal influence and with salinities lower than 5 parts per thousand (ppt) at least 75 percent of the time. Saltwater objectives shall apply to discharges to waters with salinities greater than 5 ppt at least 75 percent of the time. For discharges to waters with salinities in between the two categories or tidally influenced freshwaters that support estuarine beneficial uses, the objectives shall be the lower of the salt or freshwater objectives, based on ambient hardness, for each substance.

CTR Receiving Water Salinity Policy

37. The CTR states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water shall be considered in determining the applicable water quality criteria. Freshwater criteria shall apply to discharges to waters with salinities equal to or less than one ppt at least 95 percent of the time. Saltwater criteria shall apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities in between these two categories, or tidally influenced freshwaters that support estuarine beneficial uses, the criteria shall be the lower of the salt or freshwater criteria, (the latter calculated based on ambient hardness), for each substance.

Receiving Water Salinity

38. The receiving waters for the subject discharge are the waters of central and lower San Francisco Bay. Salinity data indicate that the receiving waters for the subject discharge are saline according to both the Basin Plan and the CTR definitions.

Daily Maximum Effluent Limits

39. Maximum Daily Effluent Limits (MDEL) are used in this permit to protect against acute water quality effects. It is impracticable to use weekly average limitations to guard against acute effects. Weekly averages are effective for monitoring the performance of biological wastewater treatment plants, whereas the MDELs are necessary for preventing fish kills or mortality to aquatic organisms.

    NPDES regulations, the SIP, and U.S. EPA's Technical Support Document (TSD) provide the basis to establish MDELs:

    NPDES regulations at 40 Code of Federal Regulations section 122.45(d) state:
    "For continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall *unless impracticable* be stated as:
    (1) Maximum daily and average monthly discharge limitations for all discharges other than publicly owned treatment works; and
    (2) Average weekly and average monthly discharge limitations for POTWs." (Emphasis added.)

    The SIP (page 8, Section 1.4) requires water quality based effluent limits be expressed as maximum daily effluent limitations (MDELs) and average monthly effluent limitations (AMELs).

    The TSD (page 96) states daily maximum is appropriate for two reasons:

    1. The basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards.

2. The 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed. A maximum daily limit would be toxicologically protective of potential acute toxicity impacts.

Technology Based Effluent Limits

40. Permit effluent limits for conventional pollutants for the dry weather E-001 discharge are technology based. Limits in this permit are the same as those in the prior permit for the following constituents: Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS), settleable matter, oil and grease, and chlorine residual. Technology-based effluent limitations are put in place to ensure that full secondary treatment is achieved by the wastewater treatment facility.

Water Quality Based Effluent Limitations

41. During dry weather as defined by Finding 5, toxic substances in Discharge E-001 are regulated by water quality based effluent limitations (WQBELs) derived from national water quality criteria listed in the Basin Plan Tables 3-3 and 3-4, the National Toxics Rule, or U.S. EPA Gold Book, the CTR, the SIP, and/or best professional judgment. WQBELs in this Order are revised and updated from the limits in the previous permit order and their presence in this Order is based on the evaluation of the Discharger's data as described below under the Reasonable Potential Analysis. Numeric WQBELs are required for all constituents that have reasonable potential to cause or contribute to an excursion above any State water quality standard. Reasonable potential is determined and final WQBELs are developed using the methodology outlined in the SIP. If the Discharger demonstrates that the final limits will be infeasible to meet and provides justification for a compliance schedule, then interim limits are established, with a compliance schedule to achieve the final limits. Further details about the effluent limitations are given in the associated Fact Sheet, which is incorporated as part of these Findings.

Receiving Water Ambient Background Data Used in Calculating WQBELs

42. Ambient background values are utilized in the reasonable potential analysis (RPA) and in the calculation of effluent limitations for E-001 during dry weather. For RPA, ambient background concentrations shall be the observed maximum water column concentration. For calculating WQBELs, as stated in the SIP, ambient background concentration shall be the observed maximum ambient water column concentration or the arithmetic mean of observed ambient water concentrations (for the criterion/objective that is intended to protect human health from carcinogenic effects). The RMP stations at Yerba Buena Island and Richardson Bay located in the Central Bay have been sampled for most of the inorganic and some of the organic toxic pollutants. WQBELs were calculated using RMP data from 1992 through 2000 for inorganics and 1993 through 2000 for organics. However, not all the constituents listed in the CTR were analyzed by the RMP during this time. This data gap is filled by a provision in this Order that requires the Discharger to determine ambient background for those constituents. This requirement may occur either through participation in new RMP special studies or through equivalent studies conducted jointly with other Dischargers. Upon completion of the required ambient background monitoring, the Board shall use the gathered data to conduct the RPA and determine if a water-quality based effluent limitation is required.

Constituents Identified in the 303(d) List

43. On May 12, 1999, the U.S. EPA approved a revised list of impaired waterbodies prepared by the State. The list [hereinafter referred to as the 303(d) list] was prepared in accordance with Section 303(d) of the federal Clean Water Act to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. Central and lower San Francisco Bays are listed as impaired water bodies. The pollutants impairing central San Francisco Bay include chlordane, copper, DDT, diazinon, dieldrin, dioxin and

furan compounds, exotic species, mercury, total PCBs, PCBs (dioxin-like) and selenium. The pollutants impairing lower San Francisco Bay include these same pollutants, and nickel.

Dilution and Assimilative Capacity

44. In response to the State Board's Order No.2001-06, staff has evaluated the assimilative capacity of the receiving water for 303(d) listed pollutants for which the Discharger has reasonable potential in its discharge. The evaluation included a review of RMP data (local and Yerba Buena Island and Richardson Bay stations), effluent data, and WQOs. From this evaluation, staff has found that the assimilative capacity is highly variable due to the complex hydrology of the receiving water. Therefore, there is uncertainty associated with the representative nature of the appropriate ambient background data to conclusively quantify the assimilative capacity of the receiving water. Pursuant to Section 1.4.2.1 of the SIP, "dilution credit may be limited or denied on a pollutant-by-pollutant basis..."

    a. For bioaccumulative and impairing pollutants, based on BPJ, dilution credit is not included in calculating the final WQBELs. This determination will be based on available data on concentrations of these pollutants in aquatic organisms, sediment, and the water column. At the present time, dilution credit is not included for the following pollutants: mercury, dieldrin, 4,4'-DDE, dioxins and furans, PCBs, Chlordane, and selenium. Primarily, this determination is based on a San Francisco Bay fish tissue data that show these pollutants, except selenium, exceed screening levels. The fish tissue data are contained in "*Contaminant Concentrations in Fish from San Francisco Bay 1997*" May 1997. For selenium, this determination is based on Bay waterfowl tissue data presented in the California Department of Fish and Game's "*Selenium Verification Study*" (1986-1990). These data show elevated levels of selenium in the livers of waterfowl that feed on bottom dwelling organisms such as clams. Additionally, in 1987 the Office of Environmental Health Hazard Assessment issued an advisory for the consumption of two species of diving ducks in the north bay found to have high tissue levels of selenium. This suggests that there is no more assimilative capacity in the Bay for these pollutants. Denial of dilution credits in the calculation of WQBELs for bioaccumulative pollutants that are 303(d) listed is further justified by fish advisories to the San Francisco Bay. The office of Environmental Health and Hazard Assessment (OEHHA) performed a preliminary review of the data from the 1994 San Francisco Bay pilot study, "Contaminated Levels in Fish Tissue from San Francisco Bay." The results of the study showed elevated levels of chemical contaminants in the fish tissues. Based on these results, OEHHA issuedan interim consumption advisory covering certain fish species from the bay in December, 1994. This interim consumption advice was issued and is still in effect due to health concerns based on exposure to sport fish from the bay contaminated with mercury, polychlorinated biphenyls (PCBs), dioxins, and pesticides (e.g., DDT). Based on these data, the Board placed selenium, mercury, and PCBs on the CWA Section 303(d) list. The USEPA added dioxins and furans compounds, dieldrin, Chlordane, and 4,4'-DDT on the CWA Section 303(d) list.

    b. Furthermore, Section 2.1.1 of the SIP states that for bioaccumulative compounds on the 303(d) list, the Board should consider whether mass-loading limits should be limited to current levels. The Board finds that mass loading limits are warranted for certain bioaccumulative compounds on the 303(d) list for the receiving waters of this discharge. This is to ensure that this discharge does not contribute further to impairment of the narrative objective for bioaccumulation.

    c. For non-bioaccumulative constituents, it is assumed that there is assimilative capacity based on BPJ, and a conservative allowance of 10:1 dilution is granted. This is based on the SIP, which allows the Board to further limit dilution credits.

Total Maximum Daily Loads (TMDLs) and Waste Load Allocations (WLAs)

45. Based on the 303(d) list of pollutants impairing central and lower San Francisco Bay, the Board plans to adopt Total Maximum Daily Loads (TMDLs) for these pollutants no later than 2010, with the exception of dioxin and furan compounds. The Board defers development of the TMDL for dioxin and furan compounds to the U.S. EPA. Future review of the 303(d) list for central and lower San Francisco Bay may result in revision of the schedules and/or provide schedules for other pollutants.

46. The TMDLs will establish waste load allocations (WLAs) and load allocations for point sources and non-point sources, respectively, and will result in achieving the water quality standards for the water body. The final effluent limitations for this discharge will be based on WLAs that are derived from the TMDLs.

47. Compliance Schedules: Pursuant to Section 2.1.1 of the SIP, "the compliance schedule provisions for the development and adoption of a TMDL only apply when: (a) the Discharger requests and demonstrates that it is infeasible for the Discharger to achieve immediate compliance with a CTR criterion; and (b) the Discharger has made appropriate commitments to support and expedite the development of the TMDL. In determining appropriate commitments, the RWQCB should consider the discharge's contribution to current loadings and the Discharger's ability to participate in TMDL development." As further described in a later finding under the heading ***Interim Limits and Compliance Schedules***, the Discharger has requested and demonstrated that it is infeasible to achieve immediate compliance for certain pollutants. Also, the Discharger has agreed to assist the Board in TMDL development through active participation and contribution to the Bay Area Clean Water Agencies (BACWA). The Board adopted Resolution No. 01-103, on September 19, 2001, which authorizes the Executive Officer of the Board to enter into a Memorandum of Understanding with BACWA, and other parties to accelerate the development of Water Quality Attainment Strategies including TMDLs for the San Francisco Bay-Delta and its tributaries.

48. The following summarizes the Board's strategy to collect water quality data and to develop TMDLs:
    a. Data collection – The Board has given the dischargers the option to collectively assist in developing and implementing analytical techniques capable of detecting 303(d)-listed pollutants to at least their respective levels of concern or water quality objectives. The Board will require dischargers to characterize the pollutant loads from their facilities into the water-quality limited water bodies. The results will be used in the development of TMDLs, but may also be used to update/revise the 303(d) list and/or change the water quality objectives for the impaired water bodies including central and lower San Francisco Bay.

    b. Funding mechanism – The Board has received, and anticipates continued receipt of, resources from federal and state agencies for the development of TMDLs. To ensure timely development of TMDLs, the Board intends to supplement these resources by allocating development costs among Dischargers through the RMP or other appropriate funding mechanisms.

Interim Limits and Compliance Schedules

49. Until final WQBELs or WLAs are adopted, state and federal anti-backsliding and antidegradation policies, and the SIP, require that the Board include interim effluent limitations. The interim effluent limitations will be the lower of the following:
    - current performance; or
    - maximum observed effluent concentration

    This permit establishes interim performance-based mass limits in addition to interim concentration limits for dry weather E-001 to limit discharge of 303(d)-listed bioaccumulative pollutants' mass loads to their current levels. These interim performance-based mass limits are based on recent

discharge data. Where pollutants have existing high detection limits, interim mass limits are not established because meaningful performance-based mass limits cannot be calculated for pollutants with non-detectable concentrations. However, the Discharger has the option to investigate alternative analytical procedures that result in lower detection limits, either through participation in new RMP special studies or through equivalent studies conducted jointly with other Dischargers.

50. Compliance schedules are established based on Section 2.2 of the SIP for limits derived from CTR criteria or are based on the Basin Plan for limits derived from the Basin Plan WQOs. If an existing Discharger cannot immediately comply with a new and more stringent effluent limitation, the SIP and the Basin Plan authorize a compliance schedule in the permit. To qualify for a compliance schedule, both the SIP and the Basin Plan require that the Discharger demonstrate that it is infeasible to achieve immediate compliance with the new limit. The SIP and Basin Plan require that the following information be submitted to the Board to support a finding of infeasibility:
    i. documentation that diligent efforts have been made to quantify pollutant levels in the discharge and sources of the pollutant in the waste stream, including the results of those efforts;
    ii. documentation of source control and/or pollution minimization efforts currently under way or completed;
    iii. a proposed schedule for additional or future source control measures, pollutant minimization or waste treatment; and
    iv. a demonstration that the proposed schedule is as short as practicable.

51. On April 25, 2002, the Discharger submitted a feasibility study, which demonstrated according to the Basin Plan (page 4-14, Compliance Schedule) or SIP (Section 2.1, Compliance Schedule), it is infeasible to immediately comply with the WQBELs calculated according to Section 1.4 of the SIP. Therefore, this permit establishes a five-year compliance schedule for final limits based on CTR or NTR criteria (e.g., copper and selenium), a compliance schedule of March 31, 2010, for final limits based on the Basin Plan numeric objectives (e.g., mercury) except for dioxin TEQ. These compliance schedules both exceed the length of the permit, therefore, these calculated final limits are intended for point of reference for the feasibility demonstration and are only included in the findings by reference to the fact sheet. Additionally, the final WQBELs for copper, and mercury will very likely be based on either the Site Specific Objective (SSO) or TMDL/WLA as described in other findings specific to each of the pollutants.

52. During the compliance schedules, interim limits are included based on current treatment facility performance or on existing permit limits, whichever is more stringent to maintain existing water quality. The Board may take appropriate enforcement actions if interim limits and requirements are not met.

Antibacksliding and Antidegradation

53. The interim limits in this permit are in compliance with antidegradation and antibacksliding because (1) the interim limits hold the Discharger to current facility performance or current limitations; and (2) because the final limit is in compliance with anti-backsliding requirements.

Specific Basis

Reasonable Potential Analysis

54. As specified in 40 CFR 122.44(d) (1) (i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard." Using the method prescribed in Section 1.3 of the SIP, Board staff has analyzed the dry weather Discharge E-001 effluent data to determine if this discharge has a reasonable potential to cause or contribute to an excursion above a State water quality standard ("Reasonable Potential Analysis" or

"RPA"). For all parameters that have reasonable potential, numeric water quality-based effluent limitations (WQBELs) are required. The RPA compares the effluent data with numeric and narrative WQOs in the Basin Plan and numeric WQCs from the U.S. EPA Gold Book, the NTR, and the CTR.

55. ***Wet Weather Discharges and Exception to 10:1***

a. In Order No. 79-67, the Board concluded that facilities necessary to achieve the specified long term average wet weather CSO overflow frequencies (see Finding 16, above), provided adequate overall protection of beneficial uses. This order also requires further study of discharges to confined areas. Order No. 89-102 concluded that the CSO discharges met the requirements for an exception to the Basin Plan prohibition against discharges receiving less than 10:1 minimum initial dilution or discharging to a dead-end slough.

For the secondary effluent from the Southeast treatment plant, Board Order No. 96-116 included a finding that the Discharger had met the requirements in the Basin Plan for an exception to the prohibition requiring a minimum initial dilution of at least 10:1 and discharge to a dead-end slough. This Order allowed the wet weather discharge of effluent treated to secondary levels into Islais Creek through the Quint Street (E-002) discharge point. This discharge occurs when the deep-water outfall (E-001) is at capacity.

The exceptions to Basin Plan requirements cited in these previous Orders are still consistent with the Basin Plan. In particular, they are consistent with and implement the approach for wet weather overflows as described in Chapter 4 of the Basin Plan.

b. As specified by the CSO Policy, wet weather effluent from Discharges E-001 through E-006 and CSO wastes CSO 009 through CSO 043 do not have reasonable potential to cause, or contribute to an excursion above any state water quality standard as long as the Discharger implements and maintains the Nine Minimum Control measures and fully implements the Wet Weather Operations Plan. Therefore, the following methods of determining reasonable potential do not apply to wet weather effluent wastes E-001 through E-003 and wastes CSO 009 through CSO 043.

56. ***Reasonable Potential Methodology***. The method for determining reasonable potential involves identifying the observed maximum pollutant concentration in the effluent (MEC) for each constituent, based on effluent concentration data. The RPA for all constituents is based on zero dilution, according to section 1.3 of the SIP. There are three triggers in determining reasonable potential.

a. The first trigger is activated when the maximum effluent concentration (MEC) is greater than the lowest applicable water quality objective (WQO), which has been adjusted for pH, hardness, and translator data, if appropriate. An MEC that is greater than the (adjusted) WQO means that there is reasonable potential for that constituent to cause or contribute to an excursion above the WQO and a water quality based effluent limitation (WQBEL) is required. (Is the MEC>WQO?)
b. The second trigger is activated if observed maximum ambient background concentration (B) is greater than the adjusted WQO and the MEC is less than the adjusted WQO or the pollutant was not detected in any of the effluent samples and all of the detection levels are greater than or equal to the adjusted WQO. If B is greater than the adjusted WQO, then a WQBEL is required. (Is B>WQO?)
c. The third trigger is activated after a review of other information determines that a WQBEL is required even though both MEC and B are less than the WQO. A limit is only required under certain circumstances to protect beneficial uses.

57. ***Summary of RPA Data and Results.*** The RPA was based on dry weather effluent monitoring data for Discharge E-001 from January 1999 through December 2001 for metals, selenium, cyanide, and organic pollutants. For dioxin TEQ, data from August 1995 to November 2001 were used for RPA. Based on the RPA methodology described above and in the SIP, the following constituents have been found to have reasonable potential to cause or contribute to an excursion above water quality objectives: copper, lead, mercury, nickel, silver, zinc, bis(2-ethylhexyl)phthalate, DDE, dieldrin, tributyltin and dioxin TEQ. Based on the RPA, numeric water quality based effluent limits are required to be included in the permit for these constituents. DDE and dieldrin were not detected in any of the Discharger's effluent samples, but all detection levels were above the lowest applicable WQO. However, background concentrations were above the adjusted WQO (trigger #2), therefore RP is affirmed and final limits are included with compliance based on the Minimum Levels in Appendix 4 of the SIP. These Minimum Levels were derived from data provided by State certified analytical laboratories in 1997 and 1998. For dioxin TEQ, only OCDD was measured in the Discharger's E-001 dry weather discharge, but the levels were below the WQO. However, the detection limits for most of the congeners were not low enough to determine compliance with the objective. Dioxin TEQ was detected in the Discharger's Southeast WPCP influent (up to 1.76 pg/L TEQ) and CSO discharges. Also, surveys of other POTWs in the region indicate that dioxin TEQ are present in POTW effluent above the WQO (trigger #3, other information, see Finding 62 for more detailed discussion). Therefore, based on the available information, RP is affirmed for dioxin TEQ.

58. ***RPA Determinations***. The MEC from Discharge E-001 dry weather monitoring, WQOs, basis for the WQOs, background concentrations used and reasonable potential conclusions from the RPA are listed in the following table for all constituents analyzed. The RPA results for most of the constituents in the CTR (Nos. 17-126 except 38, 68,109 and 111) were not able to be determined because of the lack of background data, an objective, or effluent data. (Further details on the RPA can be found in the Fact Sheet.)

Constituent[1]	WQO (µg/L)	Basis[2]	MEC (µg/L)	Maximum Ambient Background Conc. (µg/L)	Reasonable Potential
Arsenic	36	BP, sw	5.1	2.22	No
Cadmium	9.3	BP, sw	5.21	0.13	No
Chromium	50	BP, sw,	9.2	4.4	No
Copper*	3.7	CTR, sw, T=0.83	33.3	2.45	Yes
Lead	5.6	BP, sw	14.9	0.8	Yes
Mercury*	0.025	BP, sw	0.169	0.006	Yes
Nickel*	7.1	BP, sw	8.2	3.5	Yes
Selenium*	5.0	NTR, sw	1.9	0.19	No
Silver	2.3	BP, sw	3.6	0.07	Yes
Zinc	58	BP, sw	364.8	4.6	Yes
Cyanide	1	NTR	All non-detect Detection limit = 10	Not available	No
TBT	0.01	BP, narrative	0.02	Not available	Yes
TCDD TEQ*	$1.4x10^{-8}$	CTR, BP	OCDD detected in effluent. In addition, dioxin TEQ is also detected in Southeast WPCP influent and wet	Not available	Yes

Constituent[1]	WQO (µg/L)	Basis[2]	MEC (µg/L)	Maximum Ambient Background Conc. (µg/L)	Reasonable Potential
			weather discharges		
Bis(2-ethylhexyl)Phthalate	5.9	CTR, hh	7.92	Not available	Yes
Dieldrin*	0.00014	CTR, hh	All non-detect Detection limit = 0.0019	0.000264	Yes[3]
4,4-DDE*	0.00059	CTR, hh	All non-detect Detection limit=0.0018	0.00069	Yes[3]
CTR #s 17-126 except 38, 68, 109 and 111[4]	Various or NA	CTR	Non-detect, less than WQO, or no WQO	Less than WQO or Not Available	No or Undetermined

1. *Constituents on 303(d) list, TCDD TEQ applies to Toxicity Equivalent Quantity (TEQ) of 2,3,7,8 TCDD congeners based on the 1998 WHO toxicity equivalents factors.
2. BP = Basin Plan; CTR = California Toxics Rule; sw = saltwater criteria; hh=human health criteria, H = hardness of 400 in mg/L as CaCO3; T = translator to convert dissolved to total copper.
3. Dieldrin and DDE: RPA is based on B > WQO.
4. Undetermined due to lack of background data, lack of objective, or lack of effluent data (See Fact Sheet Table 3 for full RPA results).

59. ***RPA Results for Impairing Pollutants.*** While TMDLs and WLAs are being developed, interim concentration limits are established in this permit for 303(d) listed pollutants in dry weather discharge from Discharge E-001 that have reasonable potential to cause or contribute to an excursion above the water quality standard. In addition, mass limits are required for bioaccumulative 303(d) listed pollutants that can be reliably detected. Constituents on the 303(d) list for which the dry weather Discharge E-001 RPA determined a need for effluent limitations are copper, mercury, nickel, dioxin TEQ, and dieldrin. This list also includes 4,4-DDE because although 4,4-DDE is not directly listed under the 303(d) list, it is a breakdown product of DDT, which is one of the pollutants impairing the central San Francisco Bay. Final determination of dry weather discharge from Discharge E-001 RPA for other constituents identified on the 303(d) list could not be performed due to lack of available effluent data, lack of background data or lack of an established water quality objective or criterion.

60. ***Interim Limits with Compliance Schedules.***
    a. On April 25, 2002, the Discharger submitted a feasibility study, to demonstrate that it is infeasible to immediately comply with the WQBELs calculated according to Section 1.4 of the SIP for Waste E-001. The Board concurs that it is infeasible for the Discharger to immediately comply with the effluent limitations for copper, mercury, and dioxin TEQ. Therefore, this Order establishes compliance schedules for these pollutants. For limits based on CTR (e.g., copper), this Order establishes a five-year compliance schedule as allowed by the CTR and SIP. For limits based on the Basin Plan numeric objectives (e.g., mercury), this Order establishes a compliance schedule until March 31, 2010. The Basin Plan provides for a 10-year compliance schedule for implementation of measures to comply with new standards as of the effective date of those standards. This provision has been construed to authorize compliance schedules for new interpretations of existing standards, such as the numeric water quality objectives specified in the Basin Plan, resulting in more stringent limits than in the previous permit. Due to the adoption of the SIP, the Board has newly interpreted these objectives. As a result of applying the SIP

methodologies, the effluent limitations for some pollutants are more stringent than the prior permit. Accordingly, a compliance schedule is appropriate here for the new limits for these pollutants.

b. Since the compliance schedules for CTR criteria and Basin Plan numeric water quality objectives both exceed the length of the permit which is 4 years and 11 months, therefore, these calculated final limits are intended as points of reference for the feasibility demonstration and are only included in the findings by reference to the fact sheet. Additionally, the actual final WQBELs for these pollutants will very likely be based on either the Site Specific Objective (SSO) or TMDL/WLA as described in other findings specific to each of the pollutants.

Specific Pollutants

61. *Polynuclear Aromatic Hydrocarbons (PAHs).* The RPA was conducted on individual PAHs, not total PAHs, as required by the SIP and CTR. The effluent monitoring data set is based on sampling results from 1998 to 2001. All of the concentrations were reported as non-detected with detection limits higher than the WQOs. Background concentrations were all below the WQOs. Based on the SIP, there is insufficient data to determine reasonable potential. Provision F.3 requires the Discharger to characterize the effluent for individual PAH constituents listed in Table 2 of the SMP with improved detection limits. Upon completion of the required effluent monitoring, the Board will use the gathered data to complete the RPA for all individual PAH constituents (as listed in the CTR) and determine if a water quality-based effluent limitation is required.

CTR Number	Constituent	WQO[1] (µg/L)	MEC[2] (µg/L)	B	RP[3]
60	Benzo(a)Anthracene	0.049	ND (Min. DL 0.84)	0.0053	U
61	Benzo(a)Pyrene	0.049	ND (Min. DL 1.21)	0.0025	U
62	Benzo(b)Fluoranthene	0.049	ND (Min. DL 1.65)	0.0046	U
64	Benzo(k)Fluoranthene	0.049	ND (Min. DL 1.14)	0.0015	U
73	Chrysene	0.049	ND (Min. DL 1.01)	0.0041	U
74	Dibenzo(a,h)Anthracene	0.049	ND (Min. DL 1.41)	0.0006	U
92	Indeno(1,2,3-cd) Pyrene	0.049	ND (Min. DL 1.35)	0.004	U

1. WQO based on the numeric WQO for protection of human health through consumption of organisms only.
2. All Discharger data was non-detect with minimum detection limit ranged from 0.84 to 1.65 µg/L.
3. U = Undetermined. All RPA results are undetermined due to detection levels higher than WQOs.
4. ND=Non-detect
5. DL=reported detection limit

62. *4,4 DDE and Dieldrin.* Board staff could not determine an MEC for 4,4 DDE and dieldrin because it was not detected in the effluent, and all of the detection limits are higher than lowest WQO (Section 1.3 of the SIP). Board staff conducted the RPA by comparing the WQO with RMP ambient background concentration data gathered using research-based sample collection, concentration, and analytical methods. The RPA indicates that 4,4 DDE and dieldrin have reasonable potential, and numeric WQBELs are required.

63. The current 303(d) list includes central and lower San Francisco Bay as impaired for dieldrin and DDT. 4,4 DDE is chemically linked to the presence of DDT. The Board intends to develop TMDLs

that will lead towards overall reduction of dieldrin and 4,4-DDE. The water quality-based effluent limits specified in this Order may be changed to reflect the WLAs from this TMDL. To assist the Board in developing TMDLs, the Discharger has the option to participate in a special study, through the RMP, or other mechanism, to investigate the feasibility and reliability of different methods of increasing sample volumes to lower the detection limit for these compounds. Furthermore, the Discharger should submit the preferred method to U.S. EPA for approval. If analytical methodologies improve and the detection levels decrease to a point that show discharge concentrations above the limit in this Order, the Board will re-evaluate the Discharger's feasibility to comply with the limits and determine the need for a compliance schedule and interim performance limits at that time. Since dieldrin and 4,4-DDE are both bioaccumulative and on the 303(d) list due to fish tissue concentrations, there is no assimilative capacity, and no dilution credit was allowed in the final limit calculations.

64. *Dioxin TEQ.*

a. The CTR establishes a numeric human health WQO of 0.014 picograms per liter (pg/L) for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) based on consumption of aquatic organisms.

b. The preamble of the CTR states that California NPDES permits should use toxicity equivalents (TEQs) where dioxin-like compounds have reasonable potential with respect to narrative criteria. The preamble further states that U.S. EPA intends to use the 1998 World Health Organization Toxicity Equivalence Factor (TEF)[1] scheme in the future and encourages California to use this scheme in State programs. Additionally, the CTR preamble states U.S. EPA's intent to adopt revised water quality criteria guidance subsequent to their health reassessment for dioxin-like compounds.

c. The SIP addresses toxic priority pollutants, including dioxins and furans. The SIP requires a limit for 2,3,7,8-TCDD if a limit is necessary, and requires twice per year monitoring for a minimum of 3 years by all major NPDES Dischargers for the other sixteen dioxin and furan compounds.

d. The Basin Plan contains a narrative WQO for bio-accumulative substances:
"Many pollutants can accumulate on particulates, in sediments, or bio-accumulate in fish and other aquatic organisms. Controllable water quality factors shall not cause a detrimental increase in concentrations of toxic substances found in bottom sediments or aquatic life. Effects on aquatic organisms, wildlife, and human health will be considered."
This narrative WQO applies to dioxin and furan compounds, based in part on scientific consensus that these compounds associate with particulates, accumulate in sediments, and bio-accumulate in the fatty tissue of fish and other organisms.

e. The U.S. EPA's 303(d) listing determined that the narrative objective for bio-accumulative pollutants was not met because of the levels of dioxins and furans in the fish tissue. In addition, OCDD was detected in the Discharger's E-001 dry weather samples, and discharge data from the Discharger's CSO monitoring and surveys of other POTWs in the region indicate that there are a number of dioxins and furans present in the POTW effluent. Also, on March 10, 2000, the Discharger submitted a draft report titled Dioxin in San Francisco Wastewater. The report indicated that during the study period dioxin TEQ was detected in the Southeast Water Pollution Control Plant influent at concentrations greater than the water quality criterion (0.95 pg/L vs.

[1] The 1998 WHO scheme includes TEFs for dioxin-like PCBs. Since dioxin-like PCBs are already included within "Total PCBs", for which the CTR has established a specific standard, dioxin-like PCBs are not included in this Order's version of the TEF scheme.

0.014 pg/L). Since dioxins and furans do not readily breakdown, there is a reasonable potential for the Discharger to contribute to the impairment of the narrative objective.

65. Tributyltin.
    a. The criterion for tributyltin is the USEPA chronic water quality criteria of 0.01 ug/l (CCC) and 0.37 ug/l (CMC) for the protection of marine water aquatic life. Based on best professional judgment, the application of these criteria is necessary to ensure protection of the Basin Plan's narrative objective for toxicity.
    b. Tributyltin was detected twice in the Discharger's effluent. Out of the four sample taken by the Discharger, two was non detect with detection limit greater than the chronic criteria. The maximum effluent concentration from the two remaining data points was 0.02 µg/L, which is greater than the chronic criterion. Therefore, there is a reasonable potential for the Discharger to contribute to the exceedance of the narrative objective.

66. *Other organics*. The Discharger has performed organics sampling once a year as required by the previous permit (Order No. 94-149). This sampling effort has covered most of the organic constituents listed in the CTR. This data set was used to perform the RPA for other organics. The full RPA is presented as an attachment in the Fact Sheet. In most cases (about 100 out of the 126 priority pollutants), reasonable potential cannot be determined because detection limits are higher than the lowest WQOs and/or ambient background concentrations are not available. The Discharger will continue to monitor for these constituents in the effluent and the receiving water using analytical methods that provide the best feasible detection limits. When sufficient data are available, a reasonable potential analysis will be conducted to determine whether to add numeric effluent limitations to the Order or to continue monitoring.

67. The Board recognizes that the SIP requirements relating to RPA and calculation of effluent limitation referenced in this permit do not specifically apply to dioxin TEQ and tributyltin because these pollutants are not in the CTR. However, Board staff finds the approach outlined in the SIP for other toxic pollutants is an appropriate and reasonable approach. As indicated above, based on available information, there was reasonable potential for dioxin TEQ and tributyltin to exceed the narrative WQO for bio-accumulative substances, so WQBELs are necessary.

68. *Effluent RP Monitoring*. This Order does not include effluent limitations for constituents that do not show a reasonable potential, but continued monitoring for many of them is required in the Provision of this Order. If concentrations of these constituents increase significantly, the Discharger will be required to investigate the source of the increases and establish remedial measures if the increases result in a reasonable potential to cause or contribute to an excursion above the applicable water quality standard.

69. *Permit Reopener*. The Order includes a reopener provision to allow numeric effluent limitations to be added or deleted in the future for any constituent that exhibits or does not exhibit, respectively, reasonable potential. The Board will make this determination based on monitoring results.

Development of Effluent Limitations

Interim Limits with Compliance Schedules.

70. The Discharger has demonstrated infeasibility to meet the WQBELs calculated according to Section 1.4 of the SIP for copper, mercury and dioxin TEQ, thereby complying with the infeasibility requirements in Section 2.1 of the SIP. This Order establishes compliance schedules for these pollutants that extend beyond one year. Pursuant to the SIP, and 40 CFR 122.47, the Board shall establish interim numeric limitations and interim requirements to control the pollutant. Except as

authorized in the SIP and discussed elsewhere in this Order, this Order establishes interim limits for these pollutants based on the previous permit limits or plant performance, whichever is more stringent. Specific basis for these interim limits are described in the following findings for each pollutant. This Order also establishes interim requirements in a provision for development and/or improvement of a Pollution Prevention Program to reduce pollutant loadings to the treatment plant, and for submittal of annual reports on this Program. The Discharger has committed to support development of TMDLs for pollutants which its discharge may be contributing to the impairment. BACWA, which the Discharger is a member of, has entered into a Memorandum of Understanding with the Board to accelerate development of these TMDLs to reduce overall loading of these pollutants to the Bay.

Copper

71. CTR *Copper Water Quality Objectives*. Copper is listed on the 303(d) list as a pollutant that is impairing central and lower San Francisco Bay. The saltwater objective for copper in the adopted CTR is 3.1 µg/L dissolved copper. Included in the CTR are translator values to convert the dissolved objectives to total objectives. The Discharger may perform a translator study to determine a more site-specific translator. The SIP, Section 1.4.1, and the June 1996 U.S. EPA guidance document, entitled *The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion,* describe this process and provides guidance on how to establish a site-specific translator.

72. *Water-Effects Ratios*. The CTR provides for adjusting the criteria by deriving site-specific objectives through application of the water-effect ratio (WER) procedure. The U.S. EPA includes WERs to assure that the metal criteria are appropriate for the chemical conditions under which they are applied. A WER accounts for differences between a metal's toxicity in laboratory dilution water and its toxicity in water at the site. The U.S. EPA's February 22, 1994 Interim Guidance on Determination and Use of Water Effects Ratios for Metals superseded all prior U.S. EPA guidance on this subject. If the Discharger decides to pursue SSOs, they shall be developed in accordance with procedures contained in Section 5.2 of the SIP.

73. *Interim Effluent Limitation for Copper.* For Discharge E-001 during dry weather, this Order contains a limit for copper WQBEL because the 1998 303(d) list includes central and lower San Francisco Bay as impaired by copper, and because, based on the RPA, staff determined that there is reasonable potential for exceedances in the WQO for copper in Discharge E001 dry weather discharges. The Discharge E-001 dry weather final WQBEL for copper will be based on the SSO or WLA contained in a TMDL if one is completed. The SIP requires the interim numeric effluent limit for the pollutant be based on either current treatment facility performance, or on the previous Order's limitation, whichever is more stringent. This Order establishes an interim daily maximum copper limit of 37 µg/L for Discharge E-001 during dry weather.

74. *Treatment Plant Performance and Compliance Attainability for Copper.* Effluent concentrations during the recent three years (January 1998 - December 2001) range from 4.9 to 33.3 µg/L (136 samples). The effluent discharged to lower San Francisco Bay has been in consistent compliance with the previous permit limit of 37 µg/L.

Mercury

75. *Mercury Water Quality Objectives.* Both the Basin Plan and CTR include objectives that govern mercury in the receiving water. The Basin Plan specifies objectives for the protection of aquatic life of 0.025 µg/L as a 4-day average and 2.1 µg/L as a 1-hour average. The CTR specifies a long-term average criterion for protection of human health of 0.051 µg/L.

76. *Mercury TMDL.* The current 303(d) list includes the receiving water as impaired by mercury, due to high mercury concentrations in the tissue of fish from the Bay. Methyl-mercury is a persistent bioaccumulative pollutant. The Board intends to establish a TMDL that will lead towards overall reduction of mercury mass loadings into the San Francisco Bay watershed. The final mercury limitation will be based on the Discharger's WLA in the TMDL, and the permit will be revised to include the final water quality-based effluent limit as an enforceable limitation.

77. *Mercury Control Strategy.* Board staff is developing a TMDL to control mercury levels in San Francisco Bay. The Board, together with other stakeholders, will cooperatively develop source control strategies as part of TMDL development. Municipal discharge point sources are not the most significant mercury loadings to the Estuary according to the Board's staff report titled "Watershed Management of Mercury in the San Francisco Bay Estuary: Total Maximum Daily Load Report to the U.S. EPA", dated June 30, 2000. Therefore, the currently preferred strategy is applying interim mass loading limits to point source discharges while focusing mass reduction efforts on other more significant and controllable sources. While the TMDL is being developed, the Discharger will cooperate in maintaining ambient receiving water conditions by complying with performance-based mercury mass emission limits. Therefore, this Order includes interim concentration and mass loading effluent limitations for mercury for Waste E-001 during dry weather. The Discharger is required to implement source control measures and cooperatively participate in special studies as described below.

78. *Interim Concentration-Based Mercury Effluent Limitation.* This Order establishes a Discharge E-001 dry weather interim monthly average limit for mercury based on staff's analysis of the performance of over 20 secondary treatment plants in the Bay Area. This analysis is described in a Board staff report titled "Staff Report, Statistical Analysis of Pooled Data from Region-wide Ultra-clean Mercury Sampling", dated June 11, 2001. The objective of the analysis is to provide an interim concentration limit that characterizes regional facility performance using only ultra-clean data and compliance of which will ensure no further degradation of the receiving water quality resulting from the discharge. The conclusions of the report demonstrate that the statistical performance based mercury limit for a secondary plant is 87 ng/L, and for an advanced secondary plant is 23 ng/L.

79. The Discharger designed and operates the Southeast Water Pollution Control Plant as a secondary-level treatment plant; therefore the value of 87 ng/L is an appropriate interim limit. Based on Board staff's report titled "Watershed Management of Mercury in the San Francisco Bay Estuary: Total Maximum Daily Load Report to U.S. EPA," dated June 30, 2000, municipal sources are a very small contributor of the mercury load to the Bay. Because of this, it is unlikely that the TMDL will require reduction efforts beyond the source controls required by this permit.

80. *Interim Mass-Based Mercury Effluent Limitation.* This Order establishes an interim mercury mass-based effluent limitation for Discharge E-001 during dry weather. Based on treatment plant performance at the 99.87 percentile value (or average + 3* standard deviation) from effluent data gathered from April 1998 through April 2001, the total mass loadings were calculated using a 12-month moving average. This mass based effluent limitation maintains current loadings until a TMDL is established and is consistent with state and federal antidegradation and antibacksliding requirements. The final mass based effluent limitation will be based on the WLA derived from the mercury TMDL.

81. *Treatment Plant Performance and Compliance Attainability.* The Discharger started using ultra-clean method for mercury analysis in 1998. Dry weather effluent Discharge E-001 mercury concentrations from January 1999 through December 2001 ranged from 3 to 169 ng/L (136 samples). The dry

weather Waste E-001 discharged to lower San Francisco Bay has exceeded the interim limit of 87 ng/L only 4 times out of the 136 sampling events. Therefore, it is the Board staff's best professional judgment that the interim limit of 87 ng/L is attainable for the Discharger.

82. *Mercury Source Control and Special Studies*. This Order requires the Discharger to develop and implement a source control program. The source control program should maximize the Discharger's control over mercury sources in its influent, and should optimize costs and benefits. The Discharger has voluntarily implemented an aggressive mercury source control program for several years. This program has resulted in San Francisco being one of the first cities in the United States to place a regulatory ban on the sale of and discourage the use of mercury fever thermometers. Considerable work has been performed to quantify mercury loads from dentists, the primary controllable source of mercury in the Discharger's influent, and to educate the dentist community to further reduce waste and emissions. The Discharger shall maintain their existing program with continued outreach to the dentist community. The Discharger should continue cooperating with other municipal Dischargers in broader efforts to maximize mercury source control and pollution prevention efforts, assess alternatives for reducing mercury loading to receiving waters, and protect their beneficial uses. In addition, the Discharger's treatment of combined sewage during wet weather provides for additional treatment of stormwater, thereby providing additional treatment of mercury. This Order contains a time schedule for the mercury source control program.

Dioxin TEQ

83. *Numerical Water Quality Objective.* The CTR establishes a numeric human health WQO of 0.014 picograms per liter (pg/L) for 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (2,3,7,8-TCDD) based on consumption of aquatic organisms. A Finding above discusses the use of TEQ's for other dioxin-like compounds, the RPA procedures, and SIP requirements. Staff used TEQs to translate the narrative WQOs to numeric WQOs for the other 16 congeners.

84. This Order establishes that a final limit for dioxin TEQ will be based on the waste load allocated to the Discharger from the TMDL. The detection limit used by the Discharger is insufficient to determine the concentration of the dioxin congeners. Therefore, an interim limit for dioxin TEQ cannot be calculated. A compliance schedule is warranted because it is infeasible for the Discharger to comply with a new, more stringent WQBEL calculated pursuant to the SIP. The following findings describe the factors considered for these requirements.

    a. The Board recognizes that the primary source of dioxins and furans in the Bay Area is from air emissions from combustion sources. The root cause of the dioxin detections in the Discharger's effluent are not within the Discharger's control, and the next step of treatment will be overly burdensome and not cost effective relative to the benefits. The detections are caused by dioxins and furans compounds in domestic waste and storm water. Even with this technology, dioxin and furans concentrations cannot be further removed without significant upgrades to the facility. Based on preliminary data, the Discharger's mass contribution is minor compared to other inputs to the Bay. This cost for further reduction seems overly burdensome and not cost effective at this time.

    b. The U.S. EPA's 303(d) listing highlights the need for a region-wide cross media assessment of the problem. This integrated assessment should result in a more balanced, and more effective water quality based limitation for the Discharger.

    c. To assist in developing the TMDL, the Discharger has already completed an extensive special study of dioxin and will investigate the feasibility and reliability of different methods of

increasing sample volumes to lower the detection limits for these dioxin and furan compounds. Furthermore, the Discharger should submit the preferred method to the U.S. EPA for approval.

85. Basis for Compliance Timeframe for Dioxin and Furans

a. This Order specifies a 10-year compliance time schedule until June 30, 2012. Both the SIP and the Basin Plan authorize compliance schedules if it is infeasible for the Discharger to meet more stringent WQBELs. The SIP states that the "Discharger shall be deemed out of compliance with an effluent limitation if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported ML [minimum level]." This implies that compliance will be determined at the ML when the effluent limitation is below the ML. However, there is no ML for dioxins and furans in the SIP. As a result, the Discharger's compliance with the new calculated WQBEL for dioxins and furans cannot be determined at this time. In such cases, the SIP and Basin Plan allow for a compliance schedule if the Discharger provides satisfactory justification. On April 25, 2002, the Discharger submitted feasibility studies to evaluate immediate compliance with the new calculated WQBELs. Based on Board staff's evaluation, the Discharger satisfies the conditions under which to grant a compliance schedule.

b. There is no interim limitation for dioxin TEQ specified in this Order because there is insufficient data with low enough detection limits. Instead, this Order requires the Discharger to investigate lowering the detection limit of dioxin and furan congeners, and to conduct additional dioxin TEQ monitoring for interim limit calculation purposes because:

i. An interim dry weather limitation for Discharge E-001 is necessary because both the CTR and the State Implementation Policy require a numeric interim limit when the compliance schedule exceeds 1 year. The SIP allows for the interim limit to be based on facility performance or existing permit limitations, which ever is more stringent.

ii. Current facility performance is represented by 12 sampling events taken at Discharge E-001 during dry weather from August 1995 through November 2000. OCDD was detected three times during this period.

iii. Wet weather facility performance is represented by 16 sampling events taken at Discharge E-002 from December 1995 through March 2001. Dioxin TEQ was detected at 1.07 pg/L.

iv. On March 10, 2000, the Discharger submitted a draft report titled *Dioxin in San Francisco Wastewater*. The report indicated that, during the study period dioxin TEQ was detected in the Southeast Water Pollution Control Plant influent at concentrations greater than the water quality criterion (0.95 pg/L vs. 0.014 pg/L).

v. Because the wet weather concentrations are about a hundred times above the water quality criterion and because dioxin TEQ is detected in the facility's dry weather influent, it is reasonable to use these data to conclude that the discharge has a reasonable potential to cause or contribute to exceedance of the standard. However, because they are estimated values, SIP excludes the use of wet weather data for CSO facilities, and because the dry weather sampling events are all non detect, these data are not sufficient to derive a performance based interim limit.

Bis(2-ethylhexyl)phthalate

86. Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate was detected twice in the Discharger's dry weather Discharge E-001 effluent, 7.9 µg/L and 1.3 µg/L. Where the 7.9 µg/L is greater than the WQO of 5.9 µg/L. Therefore, reasonable potential is confirmed under the first trigger, above. Therefore, an interim limit is required. Since there are only two detected effluent data points available it is not possible to perform a statistical analysis to determine an Interim Performance Based Effluent Limit (IPBEL). Without an IPBEL, or previous permit limit, no interim limitation can be established. This order requires the Discharger to conduct accelerated monitoring to gather data for interim limit calculation.

Tributyltin

87. Tributyltin. Tributyltin was detected twice in Discharge E-001 dry weather effluent. The observed MEC is at a concentration of 0.02 µg/L, which is greater than the USEPA criterion of 0.01 µg/L. Therefore, reasonable potential is confirmed under the first trigger, above. There are no ambient background data on tributyltin in the receiving water, and it is not possible to calculate final WQBELs for this pollutant. Therefore, an interim limit is required. Since there are only two detected effluent data points available it is not possible to perform a statistical analysis to determine an IPBEL. In addition, the previous permit does not contain an effluent limit for tributyltin. Without an IPBEL, or previous permit limit, no interim limitation can be established. This order requires the Discharger to conduct accelerated monitoring to gather data for interim limit calculation.

Final Effluent Limit.

Lead

88. Water Quality Objective. The Basin Plan contains numeric WQOs for total lead of 5.6 µg/L and 140 µg/L for chronic and acute toxicity, respectively. No translator value is needed.

89. Effluent Limitations. The final WQBELs for lead were calculated pursuant to procedures in the SIP, and are calculated as 89 µg/L and 36 µg/L daily maximum and monthly average, respectively (see the attached Fact Sheet for details).

90. Treatment Plant Performance and Compliance Attainability. The Discharge E-001 dry weather MEC reported for lead since 1999 has been 14.9 µg/L. The monthly average effluent limit (AMEL), calculated as required by Section 1.4 of the SIP, is 36 µg/L, as noted above. Based on the comparison of the MEC to the AMEL, the Discharger can comply with the final WQBELs.

Nickel

91. Water Quality Objective. The Basin Plan contains numeric WQOs for total nickel of 7.1 µg/L and 140 µg/L for chronic and acute toxicity, respectively. No translator value is needed.

92. Effluent Limitations. The final WQBELs for nickel were calculated pursuant to procedures in the SIP, and are calculated as 59 µg/L and 34 µg/L daily maximum and monthly average, respectively (see the attached Fact Sheet for details). These WQBELs may be revised in the future based on the TMDL/WLA or the results of the SSO and translator studies. The current 303(d) list includes Lower San Francisco Bay as impaired by nickel. The Discharger is participating in impairment assessment studies aimed at gathering additional data on nickel concentrations in Lower San Francisco Bay. The Board has considered these studies in its 303(d) listing decision in 2001, and when considering any SSO proposed for nickel. The nickel WQBEL would be developed consistent with SIP procedures in Section 5.2 if the impairment studies support adoption of a SSO. On November 28, 2001, the Board considered a staff report on Proposed Revisions to Section 303(d) List and Priorities for Development of Total Maximum Daily Loads (TMDLs) for the San Francisco Bay Region and authorized the Executive Officer to transmit proposed revisions to the State Board. Nickel is proposed to be de-

listed from all segments of the San Francisco Estuary north of the Dumbarton Bridge including Lower San Francisco Bay but excluding the tidal portion of the mouth of Petaluma River.

93. Treatment Plant Performance and Compliance Attainability. The dry weather Discharge E-001 MEC reported for nickel since January 1999 has been 8.2 µg/L. The monthly average effluent limit (AMEL), calculated as required by Section 1.4 of the SIP, is 34 µg/L, as noted above. Based on the comparison of the MEC to the AMEL, the Discharger can comply with the final dry weather Discharge E-001 WQBELs.

Silver

94. Water Quality Objective. The Basin Plan contains a numeric WQO for total silver of 2.3 µg/L. No translator value is needed.

95. Effluent Limitations. The calculated final dry weather Discharge E-001 WQBELs for silver are an average monthly value of 12 µg/L and daily maximum value of 22 µg/L (See the attached Fact Sheet for details).

96. Treatment Plant Performance and Compliance Attainability. The dry weather Discharge E-001 MEC since January 1999 has been 3.6 µg/L. Based on the comparison of the 3.6 µg/L MEC and the 11.8 µg/L AMEL calculated based on Section 1.4 of the SIP, the Discharger can comply with the final WQBELs.

Zinc

97. Water Quality Objective. The Basin Plan contains a numeric WQO for total zinc of 58.0 µg/L as 24-hour averaged. No translator value is needed.

98. Effluent Limitations: The calculated final dry weather Discharge E-001 WQBELs for zinc are 720 µg/L and 490 µg/L for daily maximum and monthly average, respectively (See the attached Fact Sheet for details).

99. Treatment Plant Performance and Compliance Attainability. The dry weather Discharge E-001 MEC since January 1999 has been 364.8 µg/L. Based on the comparison of the 364.8 µg/L MEC and the 490 µg/L AMEL calculated based on Section 1.4 of the SIP, the Discharger can comply with the final WQBELs.

Bis(2-ethylhexyl)phthalate

100. No dilution credit is allowed in the calculation of effluent limitations for bis(2-ethylhexyl)phthalate, a bioaccumulative pollutant that is not on the 303(d) list until there is data and information to demonstrate the assimilative capacity in the receiving water for this pollutant and to justify a dilution credit. This cautious approach is appropriate because of the greater potential for adverse impacts to biota from bioaccumulative pollutants as compared to non-bioaccumulative pollutants. Waiting for a 303(d) listing before denying dilution credits would allow impairment to occur which is contrary to the goal of water quality based permits The Discharger is required, by the August 6th letter, to collect ambient background data to characterize the concentration levels of bis(2-ethylhexyl)phthalate in the Bay. The Regional Monitoring Program also periodically collects sediment and fish tissue data from the main channel of the Bay. The Discharger may supplement these data with data closer to its outfall. Once the data are collected, Board staff can reassess the potential assimilative capacity, and establish dilution credits if appropriate.

Section 1.4.2 of the SIP states that the Regional Board has the discretion to allow mixing zone and dilution credit in accordance with the provisions of the section. Section 1.4.2.2.B states that:

"The RWQCB shall deny or significantly limit a mixing zone and dilution credit as necessary to protect beneficial uses, meet the conditions of this Policy, or to comply with other regulatory requirements. Such situations may exist based upon the quality of the discharge, hydraulics of the water body, or the overall discharge environment (including water column chemistry, organism health, and potential for bioaccumulation). For example, in determining the extent of or whether to allow a mixing zone and dilution credit, the RWQCB shall consider the presence of pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to organisms. In another example, the RWQCB shall consider, if necessary to protect beneficial uses, the level of flushing in water bodies in such lakes, reservoirs, enclosed bays, estuaries or other water bodies types where pollutants may not be readily flushed through the system. In the case of multiple mixing zones, proximity to other outfalls shall be carefully considered to protect beneficial uses."

Evidence of Bioaccumulation for Bis(2-ethylhexyl)phthalate

Bis(2-ethylhexyl)phthalate is a bioaccumulative pollutant, similar to other pollutants currently on the 303(d) list as impairing the Bay. Generally, bioaccumulation is most likely to occur with persistent and very hydrophobic chemicals; that is, those with log K_{ow} values from 5 to 8 (U.S. EPA Bioaccumulation and Bioconcentration Screening, page 7.4). See the table below for a comparison of these chemical characteristics.

Chemical	Log K_{ow}	303(d) Listed (yes or no)
bis(2-ethylhexyl)phthalate	5.1	No
4-4 DDE	5.7	Yes
Dieldrin	4.6	Yes
Aroclor-1260	7.1	Yes

Based on the SIP and the similar bioaccumulative characteristics to other pollutants already listed as impairing the Bay, Board finds that it is appropriate and necessary to deny mixing zone and dilution credits for bis(2-ethylhexyl)phthalate.

Whole Effluent Acute Toxicity

101. This Order includes effluent limits for whole-effluent acute toxicity. Compliance evaluation is based on 96-hour flow-through bioassays. U.S. EPA promulgated updated test methods for acute and chronic toxicity bioassays on October 16, 1995, in 40 CFR Part 136. Dischargers have identified several practical and technical issues that need to be resolved before implementing the new procedures, referred to as the 4th Edition. The primary unresolved issue is the use of younger, possibly more sensitive fish, which may necessitate a reevaluation of permit limits. SWRCB staff recommended to the Board that new or renewed permit holders be allowed a time period in which new laboratories can become proficient in conducting the new tests. A provision is included in this Order granting the Discharger 12 months to implement the new test method. In the interim, the Discharger is required to continue using the current test protocols.

Whole Effluent Chronic Toxicity

102. a. *Program History.* The Basin Plan contains a narrative toxicity objective stating that "All waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental responses to aquatic organisms" and that "there shall be no chronic toxicity in ambient waters." In 1986, the Board initiated the Effluent Toxicity Characterization Program (ETCP), with the goal of developing and implementing toxicity limits for each Discharger based on actual characteristics of both receiving waters and waste streams. Dischargers were required to monitor their effluent using critical life stage toxicity tests to generate information on toxicity test species sensitivity and effluent variability to allow development of appropriate chronic toxicity effluent limitations. In 1988 and 1991, selected Dischargers conducted two rounds of effluent characterization. A second round was completed in 1995, and the Board is evaluating the need for a third round. Board guidelines for conducting toxicity tests and analyzing results were published in 1988 and last updated in 1991. The Board adopted Order No. 92-104 in August 1992 amending the permits of eight Dischargers to include numeric chronic toxicity limits. However, due to the court decision which invalidated the California Enclosed Bays and Estuaries Plan and Inland Surface Waters Plan, on which Order No. 92-104 was based, the SWRCB stated, by letter dated November 8, 1993, that the Board will have to reconsider the order. In the meantime, permits now include narrative rather than numeric limits. The numeric test values should then be used as toxicity "triggers" to first accelerate monitoring and then initiate Toxicity Reduction Evaluations (TREs).

b. *Board Program Update.* The Board intends to reconsider Order No. 92-104 as directed by the SWRCB, and to update, as appropriate, the Board's Whole Effluent Toxicity (chronic and acute) program guidance and requirements. This will be done based on analysis of Discharger routine monitoring and ETCP results, and in accordance with current and SWRCB guidance. In the interim, decisions regarding the need for and scope of chronic toxicity requirements for individual Dischargers will continue to be made based on BPJ as indicated in the Basin Plan.

c. *Discharge Monitoring.* The Discharger initiated another round of ETCP screening in May through July 2001. Results from the May and June 2001 test events indicated that the three most sensitive species to the Southeast effluent were the invertebrates *Mytilus sp.* (mussel), *Haliotis rufescens* (abalone), and *Strongylocentrotus purpuratu* (echinoderm/urchin). Literature research indicates that all three species are sensitive to ammonia, with both abalone and echinoderms being more sensitive to ammonia than mussels. In July 2001, January, and February 2002, the Discharger conducted another three rounds of screening. This time Toxicity identification evaluation (TIE) manipulations were used to determine whether or not ammonia contributed to the toxic responses of abalone and urchin to the Southeast effluent. Parallel screening tests were run using ammonia stripped effluent and ammonia stripped effluent with ammonia spike. The results concluded that ammonia contributed to the toxic response of all three species. In addition, it also showed that Echinoderm development appears to be most sensitive to Southeast effluent following zeolite treatment to remove ammonia toxicity and should replace the current use of bivalves for NPDES compliance chronic toxicity testing.

d. *Permit Requirements.* In accordance with U.S. EPA and SWRCB Task Force guidance, and based on BPJ, this Permit includes requirements for chronic toxicity monitoring based on the Basin Plan narrative toxicity objective. This Permit includes the Basin Plan narrative toxicity objective as the applicable effluent limit, implemented via monitoring with numeric values as "triggers" to initiate accelerated monitoring and to initiate a chronic toxicity reduction evaluation (TRE).

e. *Permit Reopener.* The Board will consider amending this Permit to include numeric toxicity limits if the Discharger fails to aggressively implement all reasonable control measures included in its approved TRE work plan, following detection of consistent significant non-artifactual toxicity.

Pollution Prevention and Pollutant Minimization

103. The Discharger has an approved Pretreatment Program and has established a Pollution Prevention Program under the requirements specified by the Board in the Basin Plan.
    a. Section 2.4.5 of the SIP specifies under what situations and for which priority pollutant(s) (i.e., reportable priority pollutants) the Discharger shall be required to conduct a Pollutant Minimization Program in accordance with Section 2.4.5.1.
    b. There may be some redundancy required between the Pollution Prevention Program and the Pollutant Minimization Program.
    c. Where the two programs' requirements overlap, the Discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.
    d. For copper and mercury, the Discharger will conduct any additional source control measures in accordance with California Water Code 13263.3 and Section 2.1 of the SIP. Section 13263.3 establishes a separate process outside of the NPDES permit process for preparation, review, approval, and implementation of such source control and pollutant minimization measures.

104. The Board staff intends to require an objective third party to establish model programs, and to review program proposals and reports for adequacy. This is to encourage use of Pollution Prevention and does not abrogate the Board's responsibility for regulation and review of the Discharger's Pollution Prevention Program. Board staff will work with the Discharger and other POTWs to identify the appropriate third party for this effort.

Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations

105. *Insufficient effluent and ambient background data.* Staff's review of the effluent and ambient background monitoring data found that there were insufficient data to determine reasonable potential and calculate numeric WQBELs for most pollutants listed in the SIP.

106. On August 6, 2001, the Board sent a letter to all permitted dischargers, including the Discharger, pursuant to Section 13267 of the California Water Code requiring the submittal of effluent and receiving water data on priority pollutants. This formal request for technical information addresses the insufficient effluent and ambient background data; and the dioxin study. BACWA submitted the sampling plan on October 1, 2001. An interim report presenting the data is due May 18, 2003, with the final report due 180 days prior to expiration of the permit.

107. The letter (described above) is referenced throughout the permit as the "August 6, 2001 Letter". The requirements of this letter are incorporated as a provision in this Order.

Optional Studies

108. *Optional Mass Offset.* This Order contains requirements to prevent further degradation of the impaired water body. Such requirements include the adoption of interim mass limits that are based on treatment plant performance, provisions for aggressive source control, feasibility studies for wastewater reclamation, and treatment plant optimization. After implementing these efforts, the Discharger may find that further net reductions of the total mass loadings of the 303(d)-listed

pollutants to the receiving water can only be achieved through a mass offset program. This Order includes an optional provision for a mass offset program.

109. *Copper Translator Study.* The Basin Plan does not establish a water quality objective for copper. Therefore, the CTR water quality criterion for copper, 3.1 µg/L dissolved, is the applicable standard. Since NPDES permit limits must be expressed as a total recoverable metal value, a translator is required to convert the dissolved objective into a total recoverable objective. Pursuant to Appendix 3 of the SIP, the default translator used in this permit is 0.83, which converts the 3.1 µg/L dissolved to 3.7 µg/L total. An optional copper translator study is included in this permit to encourage the Discharger to develop a local translator value for copper in place of the default translator value established in the SIP, 0.83.

110. *Odor:* The Discharger has received odor complaints from various locations in its service area. Standard Provisions Section A.1. of this Order specifies that "neither the treatment nor the discharge of pollutants shall create a pollution, contamination, or nuisance as defined in Section 13050 of the California Water Code." Odors fall under the definition for nuisance. To address this problem, this Order contains a provision requiring the Discharger to revise and update its Odor Control Master Plan to include source identification, mitigation, and monitoring.

Other Discharge Characteristics and Permit Conditions

111. *Pretreatment Program:* The Discharger has implemented and is maintaining a U.S. EPA approved pretreatment program in accordance with Federal pretreatment regulations (40 CFR 403) and the requirements specified in Attachment E "Pretreatment Requirements" and its revisions thereafter.

112. *O & M Manual.* An Operations and Maintenance Manual is maintained by the Discharger for purposes of providing plant and regulatory personnel with a source of information describing all equipment, recommended operation strategies, process control monitoring, and maintenance activities. In order to remain a useful and relevant document, the manual shall be kept updated to reflect significant changes in treatment facility equipment and operation practices.

113. *NPDES Permit.* This Order serves as a NPDES Permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code [California Environmental Quality Act (CEQA)] pursuant to Section 13389 of the California Water Code. In addition, adoption of this Order is exempt from CEQA pursuant to California Code of Regulations, Title 11, section 15301, involving negligible or no expansion of use of an existing facility.

114. *Notification.* The Discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharge and have been provided an opportunity to submit their written views and recommendations.

115. *Public Hearing.* The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that the Discharger shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Discharge of treated wastewater at a location or in a manner different from that described in this Order is prohibited.

2. Dry weather discharge from Discharge E-001 where the wastewater does not receive an initial dilution of at least 10:1 is prohibited.

3. Discharge of Wastes 002 and 003 and CSO-009 through CSO-043 outside of the wet weather period as defined in Finding 5.a is prohibited.

4. The bypass or overflow of untreated or partially treated wastewater to waters of the State, either at the treatment plant or from the collection system or pump stations tributary to the treatment plant, is prohibited except during a wet weather day.

5. Degradation of harvestable shellfish in the area as a result of Discharge E-001 dry weather discharge is prohibited.

6. The discharge of average dry weather flows greater than 85.4 mgd is prohibited. The Discharger shall determine the average dry weather flow over three consecutive dry weather months each year.

B. EFFLUENT LIMITATIONS

Conventional Pollutants

1. Dry weather discharge from Discharge E-001 (Discharge from Southeast Water Pollution Control Plant's deep water outfall) shall not exceed the following limits:

a.	Constituent	Units	Monthly Average	Weekly Average	Daily Maximum
i	5-day Biochemical Oxygen Demand (BOD_5) mg/L		30	45	
ii	Total Suspended Solids (TSS)	mg/L	30	45	
iii	Oil & Grease	mg/L	10		20
iv	Settleable Matter	ml/L-hr	0.1		0.2

b. pH: The pH of the effluent shall not exceed 9.0 nor be less than 6.0.

When the Discharger conducts continuous pH monitoring, the Discharger shall be in compliance with the pH limitation specified herein, provided that all of the following conditions are satisfied: (i) pH is monitored continuously; (ii) The total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 26 minutes in any calendar month; and (iii) No individual excursion from the range of pH values shall exceed 60 minutes.

c. 85 Percent Removal, BOD_5 and TSS: The arithmetic mean of the 5-day biochemical oxygen demand (BOD_5 20°C) and total suspended solids (TSS) concentrations, for effluent samples collected in each calendar month shall not exceed 15 percent of the arithmetic mean of the respective values, for influent samples collected at approximately the same times during the same period.

d. Fecal Coliform Bacteria: The treated wastewater, at some point in the treatment process prior to discharge, shall meet the following limits of bacteriological quality:

i. The 30-day moving median value for fecal coliform density in final effluent samples shall not exceed 500 Colony Forming Units (CFU)/100 ml, nor shall more than 10% of the samples in any 30-day period equal or exceed 1100 CFU/100 ml.

e. Total Chlorine Residual: 0.0 mg/L as an instantaneous maximum.

This requirement means that total chlorine residual shall not be greater than the limit of detection in standard test methods as defined in the latest U.S. EPA approved edition of *Standard Methods for the Examination of Water and Wastewater*. The Discharger may elect to use a continuous on-line monitoring system(s) for measuring flows, chlorine and sodium bisulfite dosage (including a safety factor) and concentration to prove that chlorine residual exceedances are false positives. If convincing evidence is provided, Board staff will conclude that these false positive chlorine residual exceedances are not violations of this permit limit.

2. Discharge E-001(wet weather), and Discharges E-002 through E-006 shall not exceed the following limits:

a. Fecal Coliform Bacteria: The 30-day moving median value for fecal coliform density in final effluent samples shall not exceed 500 CFU/100 ml, nor shall more than 10% of the sample equal or exceed 1100 CFU/100ml.

b. Total Chlorine Residual: 0.0 mg/L as an instantaneous maximum.

This requirement means that total chlorine residual shall not be greater than the limit of detection in standard test methods as defined in the latest U.S. EPA approved edition of *Standard Methods for the Examination of Water and Wastewater*. The Discharger may elect to use a continuous on-line monitoring system(s) for measuring flows, chlorine and sodium bisulfite dosage (including a safety factor) and concentration to prove that chlorine residual exceedances are false positives. If convincing evidence is provided, Board staff will conclude that these false positive chlorine residual exceedances are not violations of this permit limit.

Toxic Pollutants

3. *Whole Effluent Acute Toxicity:*

a. **Requirements for Southeast Water Pollution Control Plant:** Representative samples of the effluent (Dry Weather Discharge E-001) shall meet the following limits for acute toxicity. Compliance with these limits shall be achieved in accordance with Provision F.8 of this Order.

The survival of bioassay test organisms in 96-hour bioassays of undiluted effluent shall be:
1) an 11-sample median value of not less than 90 percent survival [b(1)] ; and
2) an 11-sample 90th percentile value of not less than 70 percent survival [b(2)] .

These acute toxicity limits are further defined as follows:
1) 11-sample median limit:
Any bioassay test showing survival of 90 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 90 percent represents a violation of this effluent limit, if five or more of the past ten or fewer bioassay tests also show less than 90 percent survival.

2) 90th percentile limit:
Any bioassay test showing survival of 70 percent or greater is not a violation of this limit. A bioassay test showing survival of less than 70 percent represents a violation of this effluent limit, if one or more of the past ten or fewer bioassay tests also show less than 70 percent survival.

3) If the Discharger demonstrates to the satisfaction of the Executive Officer that toxicity exceeding the levels cited above is caused by ammonia and that the ammonia in the discharge is not adversely impacting receiving water quality or beneficial uses, then such toxicity does not constitute a violation of this effluent limit.

b. **Requirements for North Point Wet Weather Facility and Southeast Water Pollution Control Plant Quint Street Outfall:** Representative samples of the effluent (E-002 and E-003) shall achieve a single sample maximum of not less than 70% survival. Acute toxicity testing shall be conducted on the next subsequent wet weather event if survival falls below 70%.

4. *Chronic Toxicity:*
Representative samples of effluent (Effluent Station Dry Weather E-001) shall meet the following requirements for chronic toxicity. Compliance with the Basin Plan narrative chronic toxicity objective shall be achieved in accordance with Provision F.9 of this Order and shall be demonstrated according to the following tiered requirements based on results from representative samples of the treated final effluent meeting test acceptability criteria:
   i. Routine monitoring;
   ii. Accelerated monitoring after exceeding a three sample median value of 10 chronic toxicity[2] (TUc) or a single sample maximum of 20 TUc or greater. Accelerated monitoring shall consist of monitoring at frequency intervals of one half the interval given for routine monitoring in the SMP of this Order;
   iii. Return to routine monitoring if accelerated monitoring does not exceed either "trigger" in "ii", above;
   iv. Initiate approved toxicity identification evaluation/toxicity reduction evaluation (TIE/TRE) work plan if accelerated monitoring confirms consistent toxicity above either "trigger" in "ii", above;
   v. Return to routine monitoring after appropriate elements of TRE work plan are implemented and either the toxicity drops below "trigger" level in "ii", above or, based on the results of the TRE, the Executive Officer authorizes a return to routine monitoring.

5. *Toxic Substances*: The combined effluent (Dry Weather Discharge E-001 as defined in the attached Self-Monitoring Program) shall not exceed the following limits (1):

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[2] A TUc equals 100 divided by the no observable effect level (NOEL). The NOEL is determined from IC, EC, or NOEC values. Monitoring and TRE requirements may be modified by the Executive Officer in response to the degree of toxicity detected in the effluent or in ambient waters related to the discharge. Failure to conduct the required toxicity tests or a TRE within a designated period shall result in the establishment of effluent limitations for chronic toxicity.

Constituent	Daily Max	Monthly Average	Interim Daily Maximum	Interim Monthly Average	Units	Notes
Copper			37		µg/L	(1), (2)
Mercury				0.087	µg/L	(1), (3), (4)
Lead	89	36			µg/L	(1)
Nickel	59	34			µg/L	(1)
Silver	22	12			µg/L	(1)
Zinc	720	490			µg/L	(1)
Dieldrin	0.00028	0.00014			µg/L	(1), (5)
4,4-DDE	0.0012	0.00059			µg/L	(1), (5)

Footnotes :

(1) (a) Compliance with these limits is intended to be achieved through secondary treatment and, as necessary, pretreatment and source control.

(b) All analyses shall be performed using current U.S. EPA methods, or equivalent methods approved in writing by the Executive Officer. The Discharger is in violation of the limit if the discharge concentration exceeds the effluent limitation and the reported minimum level (ML) for the analysis (see note 9 for TCDD Equivalent).

(c) Limits apply to the average concentration of all samples collected during the averaging period (Daily = 24-hour period; Monthly = calendar month).

(2) This interim limit shall remain in effect until June 30, 2007, or until the Board amends the limit based on site-specific objectives or the Waste Load Allocation in the TMDL. However, during the next permit reissuance, Board staff may re-evaluate the interim limits.

(3) Mercury: Effluent mercury monitoring shall be performed by using ultra-clean sampling and analysis techniques, with a minimum level of 0.002 µg/L or lower.

(4) This interim limit shall remain in effect until March 31, 2010, or until the Board amends the limit based on site-specific objectives or the Waste Load Allocation in the TMDL. However, during the next permit reissuance, Board staff may re-evaluate the interim limits.

(5) As outlined in Section 2.4.5 of the SIP, compliance with these final limits is determined by comparing the effluent data with the corresponding Minimum Levels in Appendix 4 of the SIP: 0.01 µg/L for dieldrin; and 0.05 µg/L for 4,4-DDE; A daily maximum or monthly average valued for a given constituent shall be considered non-compliant with the effluent limits only if it exceeds the effluent limitation and the reported ML for that constituent.

6. **Interim Mass Emission Limits – Mercury**

Until TMDL and Waste Load Allocation (WLA) efforts for mercury provide enough information to establish a different WQBEL, the Discharger shall demonstrate that the total mercury mass loading from discharges to lower San Francisco Bay at the deepwater outfall (Effluent Station Dry Weather E-001) has not increased by complying with the following:

a. Interim mass emission limit: **The mass emission limit for mercury is 0.30 kilograms per month (kg/month).** The total mercury mass load shall not exceed this limit.

b. Compliance with this limit shall be evaluated using monthly moving averages of total mass load, computed as described below:

12-Month Monthly Moving Average of Total Mass Load = Average of the monthly total mass loads from the past 12 months

Monthly Total Mass Load (kg/month) = Average daily flow in a calendar month in mgd outfall (Dry Weather Waste E-001) x monthly effluent concentration measurements in µg/L corresponding to the above flows for samples taken from dry weather E-001 x 0.1151. (If more than one concentration measurement is obtained in a calendar month, the average of these measurements is used as the monthly concentration value for that month. If test results are less than the reported ML, the concentration value shall be assumed to be equal to the reported ML.)

c. The Discharger shall submit a cumulative total of mass loadings for the previous twelve months with each monthly Self-Monitoring Report. Compliance with each monthly mass limit will be determined based on the 12-month moving averages over the previous twelve months of monitoring. The Discharger may use monitoring data collected under accelerated schedules (i.e., special studies) to determine compliance.

d. The mercury TMDL and WLAs will supersede this mass emission limitation upon their completion. The Clean Water Act's antibacksliding rule, Section 402(o), indicates that this Order may be modified to include a less stringent requirement following completion of the TMDL and WLA, if the requirements for an exception to the rule are met.

C. WET WEATHER EFFLUENT PERFORMANCE CRITERIA

The Federal Combined Sewer Overflow Control Policy (59 FR 18688) regulates the operation of combined sewer systems. The Board, in Order No. 79-67, determined that the combined sewer system, designed to capture 100% of the combined sewage and storm water runoff, to attain a long term average overflow frequency specified in that order, and to maximize treatment through appropriately sized facilities, would protect beneficial uses. The Discharger has successfully and adequately designed, built, and implemented control and treatment strategies that effectively address wet weather flow conditions. The treatment and discharge process descriptions of the Discharger are referenced in the Findings of this document.

The Discharger is required to comply with the Nine Minimum Controls required in the CSO Control Policy. The Nine Minimum Controls constitute the technology based minimum controls applicable to combined sewer flows. In accordance with the Policy's Nine Minimum Controls and its Long Term Control Plan, the Discharger must maximize pollutant removal. Adherance to the following criteria will constitute compliance with CSO Policy requirements for technology based and water quality based effluent limitations, and discharge permit requirements. The Discharger shall provide documentation that addresses the following criteria for wet weather flows as part of the Monthly Self Monitoring Report requirements.

1. The Operations Plan must be filed by June 30, 2003, and approved by the Executive Officer, and then as modified during the life of the permit. Operations parameters, equipment maintenance schedules, and replacement parts for the system shall be set forth in the Operations Plan.

2. Wet Weather Operation of Bayside Facilities

a. NORTH DRAINAGE BASIN: North Point Wet Weather Facility (NPF) operation depends on rainfall, forecasts and storage conditions in the North Drainage Basin and the Central Drainage Basin. Activation of the NPF is the pumping of flow from the North Shore Pump Station into the NPF for storage or treatment.

   i. The NPF will be activated when the level of sewage and stormwater in the North Shore Storage/Transport Box is at 200 inches.
   ii. The NPF will be activated treating 135-145 mgd of combined in-flow within 60 minutes of a discharge through CSN 013 to CSN 017.
   iii. The NPF will remain operational until the Central Drainage Basin (Channel) storage/transport levels are low enough that flow from the North Shore Pump Station to the Channel Pump Station will not increase the likelihood of storage transport discharges in the Central or Southeast Drainage Basins.

b. CENTRAL DRAINAGE BASIN: Channel Pump Station (CHS) operation depends on rainfall, forecasts and storage conditions in the Central Drainage Basin and the Southeast Drainage Basin
   i. CHS will be pumping 80 mgd to the Southeast Water Pollution Control Plant (SEP) or SEP influent will be at 250 mgd (from CHS and Flynn Pump Stations [FPS] and SEP Lift Station) before there are any storage/transport discharges to Mission Creek (CSC 022 to CSC 027).
   ii. Flow from CHS to SEP may be reduced to prevent discharge from the Southeast Drainage Basin storage/transport structures if the flow levels between the Central Drainage Basin structures and the Southeast Drainage Basin structures (Griffith Pump Station and/or FPS become unbalanced, e.g., Griffith and/or Flynn storage levels continue to rise while SEP is at a maximum flow.

c. Mariposa Pump Station
   i. The Mariposa Pump Station (two wet weather pumps) will be operated at full capacity prior to discharge through CSC 029.

d. 20th Street Pump Station
   i. The 20th St. Pump Station (two wet weather pumps) will be operated at full capacity prior to discharge through CSC 030 or CSC 030A.

e. SOUTH DRAINAGE BASIN: Southeast Water Pollution Control Plant operation depends on rainfall, forecasts and storage conditions in the Central Drainage Basin and the Southeast Drainage Basin.
   i. The Southeast Water Pollution Control Plant will have an influent flow rate of 240-250 mgd prior to discharge into Islais Creek from CSS 031 to CSS 035.

f. Griffith Pump Station
   i. The Griffith Pump Station (four wet weather pumps) will be operated at full capacity prior to discharge through CSS 040 to CSS 042.

g. Sunnydale Pump Station
   i. The Sunnydale Pump Station (3 wet weather pumps) will be operated at full capacity prior to discharge through CSS 043.

3. Post Rain Activities

a. Post Wet Weather Event – Treatment at the Southeast Water Pollution Control Plant and North Point Wet Weather Facility will continue until North, Central and Southeast Drainage Basin storage/transports are substantially empty of stormwater flows.

i. If the National Weather Service predicts rain during the next 24 Hours

a) Pumping will occur until the level of sewage/stormwater in the Channel Pump Station Box is between 100-150 inches,
b) Pumping will occur until the level of sewage/stormwater in the North Shore Box is at 100 inches, and
c) Pumping will occur until the Islais Creek storage level is essentially zero.

ii. If the National Weather Service does not predict rain

a) Pumping will occur until the level of sewage/stormwater in the Channel Pump Station Box is below 150 inches,
b) Pumping will occur until the level of sewage/stormwater in the North Shore Box is below 150 inches, and
c) Pumping will occur until the Islais Creek storage level is essentially zero.

D. RECEIVING WATER LIMITATIONS

1. The discharge of dry weather waste shall not cause the following conditions to exist in waters of the State at any place:

a. Floating, suspended, or deposited macroscopic particulate matter or foam;

b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;

c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and

e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of dry weather waste shall not cause the following limits to be exceeded in waters of the State at any one place within one foot of the water surface:

a. Dissolved Oxygen: 5.0 mg/L, minimum

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, then the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.

b. Dissolved Sulfide: 0.1 mg/L, maximum

c. pH: Variation from normal ambient pH by more than 0.5 pH units.

d. Un-ionized Ammonia: 0.025 mg/L as N, annual median (except Islais Creek); and
0.16 mg/L as N, maximum.
0.40 mg/l as N, maximum for Islais Creek

e. Nutrients: Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

3. The discharge of waste shall not cause a violation of any particular water quality standard for receiving waters adopted by the Board or the State Board as required by the Clean Water Act and regulations adopted hereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

E. SLUDGE MANAGEMENT PRACTICES

1. The Discharger presently disposes of all stabilized, dewatered bio-solids (sewage sludge) from the Discharger's wastewater treatment plant by beneficially re-using as alternative daily cover at a permitted landfill or by land application at a permitted site. If the Discharger desires to dispose of sludge by a different method, the Discharger shall notify the Board and U.S. EPA in writing before start-up of the alternative disposal practice.

2. Sludge that is disposed of in a municipal solid waste landfill must meet the requirements of 40 CFR 258. The Discharger's annual self-monitoring report shall include the amount of sludge disposed of, and the landfill(s) to which it was sent.

3. All sludge generated by the Discharger must be disposed of in a municipal solid waste landfill, or in accordance with the requirements of 40 CFR 503. All the requirements of 40 CFR Part 503 are enforceable whether or not they are stated in an NPDES permit or other permit issued to the Discharger.

4. Sludge treatment, storage, and disposal or reuse shall not create a nuisance or result in groundwater contamination.

5. The treatment and temporary storage of sewage sludge at the Discharger's wastewater treatment facility shall not cause waste material to be in a position where it will be carried from the sludge treatment and storage site and deposited in the waters of the State.

6. This permit does not authorize permanent on-site storage or disposal of sewage sludge at the Discharger's wastewater treatment facility. A report of Waste Discharge shall be filed and the site brought into compliance with all applicable regulations prior to commencement of any such activity by the Discharger.

7. The Board may amend this permit prior to expiration if changes occur in applicable state and federal sludge regulations.

F. PROVISIONS

1. Permit Compliance and Rescission of Previous Waste Discharge Requirements

The Discharger shall comply with all sections of this Order beginning on July 1, 2002. Requirements prescribed by this Order supersede the requirements prescribed by Order Nos. 94-149, 95-039, and 96-116. Order Nos. 94-149, 95-039, and 96-116 are hereby rescinded upon the effective date of this Order.

Special Studies

2. **Effluent Characterization for Selected Constituents**

   The Discharger shall monitor and evaluate effluent discharged to central San Francisco Bay for the constituents listed in Enclosure A of the Board's August 6, 2001 Letter (Attachment H). Compliance with this requirement shall be achieved in accordance with the specifications stated in the Board's August 6, 2001 Letter under Effluent Monitoring for major Dischargers. The Discharger submitted a sampling plan in response to this letter, and the Executive Officer conditionally approved the plan in November 2001. Interim and final reports shall be submitted to the Board in accordance with the schedule specified below (same schedule is also specified in August 6, 2001 Letter):

   Interim and Final Reports: An interim report is due on May 18, 2003. The report should summarize the data collected to date, and describe future monitoring to take place. A final report that presents all the data shall be submitted to the Board 180 days prior to the permit expiration date. This final report shall be submitted with the application for permit reissuance.

3. **Ambient Background Receiving Water Study**

   The Discharger shall collect or participate in collecting background ambient receiving water data with other Dischargers and/or through the RMP. This information is required to perform RPAs and to calculate effluent limitations. To fulfill this requirement, the Discharger shall submit data sufficient to characterize the concentration of each toxic pollutant listed in the CTR in the ambient receiving water. The data on the conventional water quality parameters (pH, salinity, and hardness) shall also be sufficient to characterize these parameters in the ambient receiving water at a point after the discharge has mixed with the receiving waters.

   The Bay Area Clean Water Agencies, on behalf of the Discharger, submitted a sampling plan dated September 28, 2001, for a collaborative group monitoring program. The Executive Officer conditionally approved this plan in November 2001.

   Interim and Final Reports: The Discharger shall submit an interim report on May 18, 2003. The report shall summarize the data collected to date, and describe future monitoring to take place. The Discharger shall submit a final report that presents all the data to the Board 180 days prior to permit expiration. This final report shall be submitted with the application for permit reissuance.

4. **Wet Weather Facilities System Study**

   Within three years of the effective date of this permit, the Discharger shall fund the preparation of a Wet Weather Facilities system study by a mutually agreed upon third party. The objective of the study is to determine if the Discharger, has and is, maintaining and operating the wet weather facilities in compliance with the requirements set forth in this permit (e.g., minimize overflows and maximize treatment), and the Discharger's approved operations and maintenance plans. The study will be based on a mutually agreed upon scope of work, which will be provided for Board staff review and Executive Officer approval by the Discharger within one year of the effective date of this permit. This scope of work shall include a task to compile records on the maintenance and operation of the wet weather facilities.

5. **Dioxin Special Study:** The Discharger shall investigate lowering the detection limit for dioxin TEQ congeners. The special study shall also include monitoring which would allow the Board to calculate an interim limit for dioxin TEQ.

Task	Due Date
Submit study Work Plan acceptable to the Executive Officer	September 1, 2002
Implement Approve Work Plan	20 days after study plan approval
Submit Final Report	December 1, 2003

6. **Tributyltin Special Study:** The Discharger shall conduct additional tributyltin monitoring, which would allow the Board to calculate an interim limit for tributyltin.

Task	Due Date
Submit study Work Plan acceptable to the Executive Officer	September 1, 2002
Implement Approve Work Plan	20 days after study plan approval
Submit Final Report	May 31, 2003

7. **Bis(2-ethylhexyl)phthalate Special Study:** The Discharger shall investigate and improve sampling and analysis procedures for bis(2-ethylhexyl)phthalate to avoid laboratory contamination. The special study shall include monitoring requirement which would allow the Board to calculate an interim limit for bis(2-ethylhexyl)phthalate.

Task	Due Date
Submit study Work Plan acceptable to the Executive Officer	September 1, 2002
Implement Approve Work Plan	20 days after study plan approval
Submit Final Report	May 31, 2003

8. **Odor Control Master Plan:** To alleviate and minimize odor created by sewage treatment and disposal, the Discharger shall update and revise its Odor Control Master Plan to investigate methods to control odor.

Task	Due Date
Submit an Odor Control Work Plan The Plan shall include but not be limited to an odor source investigation, source mitigation study that fully addresses measures to abate odor complaints and that evaluates the feasibility of implementing those measures, odor monitoring, and implementation schedule.	September 1, 2002
Implement Work Plan	As specified in the Work Plan

9. **Pollution Prevention Program and Pollutant Minimization Program**
   a. The Discharger shall continue to improve its existing Pollution Prevention Program in order to reduce pollutant loadings to the treatment plant and therefore to the receiving waters.

b. The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than August 30th of each calendar year. Annual reports shall cover July through June of the preceding year.

Annual report shall include at least the following information:

(i) *A brief description of its treatment plant, treatment plant processes and service area.*

(ii) *A discussion of the current pollutants of concern.* Periodically, the Discharger shall analyze its own situation to determine which pollutants are currently a problem and/or which pollutants may be potential future problems. This discussion shall include the reasons why the pollutants were chosen.

(iii) *Identification of sources for the pollutants of concern.* This discussion shall include how the Discharger intends to estimate and identify sources of the pollutants. The Discharger should also identify sources or potential sources not directly within the ability or authority of the Discharger to control such as pollutants in the potable water supply and air deposition.

(iv) *Identification of tasks to reduce the sources of the pollutants of concern.* This discussion shall identify and prioritize tasks to address the Discharger's pollutants of concern. Tasks can target its industrial, commercial, or residential sectors. The Discharger may develop tasks themselves or participate in group, regional, or national tasks that will address its pollutants of concern. The Discharger is strongly encouraged to participate in group, regional, or national tasks that will address its pollutants of concern whenever it is efficient and appropriate to do so. A time line shall be included for the implementation of each task.

(v) *Continuation of outreach tasks for City employees.* The Discharger shall continue outreach tasks for City and/or District employees. The overall goal of this task is to inform employees about the pollutants of concerns, potential sources, and how they might be able to help reduce the discharge of pollutants of concerns into the treatment plant. The Discharger may provide a forum for employees to provide input to the Program.

(vi) *Continuation of a public outreach program.* The Discharger shall continue to develop a public outreach program to communicate pollution prevention to its service area. Outreach may include participation in existing community events such as county fairs, initiating new community events such as displays and contests during Pollution Prevention Week, implementation of a school outreach program, conducting plant tours, and providing public information in newspaper articles or advertisements, radio, television stories or spots, newsletters, utility bill inserts, and web site. Information shall be specific to the target audiences. The Discharger should coordinate with other agencies as appropriate.

(vii) *Discussion of criteria used to measure the Program's and tasks' effectiveness.* The Discharger shall establish criteria to evaluate the effectiveness of its Pollution Prevention Program. This shall also include a discussion of the specific criteria used to measure the effectiveness of each of the tasks in item b. (iv), b. (v), and b. (vi).

(viii) *Documentation of efforts and progress.* This discussion shall detail all of the Discharger's activities in the Pollution Prevention Program during the reporting year.

(ix) *Evaluation of Program's and tasks' effectiveness.* This Discharger shall utilize the criteria established in b. (vii) to evaluate the Program's and tasks' effectiveness.

(x) *Identification of specific tasks and time schedules for future efforts.* Based on the evaluation, the Discharger shall detail how it intends to continue or change its tasks in order to more effectively reduce the amount of pollutants to the treatment plant, and subsequently in its effluent.

c. According to Section 2.4.5 of the SIP, when there is evidence that a priority pollutant is present in the effluent above an effluent limitation and either:
   (i) A sample result is reported as detected, but not quantified (less than the Minimum Level) and the effluent limitation is less than the reported Minimum Level; or
   (ii) A sample result is reported as not detected (less than the Method Detection Limit) and the effluent limitation is less than the Method Detection Limit, then the Discharger shall expand its existing Pollution Prevention Program to include the reportable priority pollutant. A priority pollutant becomes a reportable priority pollutant when (1) there is evidence that it is present in the effluent above an effluent limitation and either (c)(i) or (c) (ii) is triggered or (2) if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level.

d. If triggered by the reasons in Provision F.9.c above and notified by the Executive Officer, the Discharger's Pollution Prevention Program shall, within 6 months, also include:
   (i) An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures approved by the Executive Officer when it is demonstrated that source monitoring is unlikely to produce useful analytical data;
   (ii) Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system, or alternative measures approved by the Executive Officer when it is demonstrated that influent monitoring is unlikely to produce useful analytical data;
   (iii) Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;
   (iv) Development of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and
   (v) An annual status report that shall be sent to the RWQCB including:
      1. All Pollution Prevention monitoring results for the previous year;
      2. A list of potential sources of the reportable priority pollutant(s);
      3. A summary of all actions undertaken pursuant to the control strategy; and
      4. A description of actions to be taken in the following year.

e. To the extent where the requirements of the Pollution Prevention Program and the Pollutant Minimization Program overlap, the Discharger is allowed to continue/modify/expand its existing Pollution Prevention Program to satisfy the Pollutant Minimization Program requirements.

f. These Pollution Prevention/Pollutant Minimization Program requirements are not intended to fulfill the requirements in The Clean Water Enforcement and Pollution Prevention Act of 1999 (Senate Bill 709).

CSO Requirements

10. **Nine Minimum Controls: The discharger shall implement and comply with the following technology-based requirements for the Bayside Wet Weather Facilities and Diversion Structures:**

    a. **Conduct Proper Operations and Regular Maintenance Programs.** The Discharger shall implement the Operations and Maintenance Plan for the combined sewer system that will

include the elements listed below. The Discharger shall also update the plan to incorporate any changes to the system and shall operate and maintain the system according to the plan. The Discharger shall keep records to document the implementation of the plan

i. **Designation of a Manager for Combined Sewer Overflows.** The Discharger shall designate a person to be responsible for the wastewater collection system and serve as the contact person regarding combined sewer overflows. The Discharger shall notify the Executive Officer of the Board within 90 days of designation of a new contact person.

ii. **Inspection and maintenance of CSS.** The Discharger shall:
- Inspect and maintain all overflow structures, regulators, pumping stations, and tide gates to ensure that they are in good working condition and adjusted to minimize overflows and prevent tidal inflow.
- Inspect each overflow outfall at least once per year. The inspection shall include, but is not limited to, entering the regulator structure if accessible, determining the extent of debris and grit build-up, and removing any debris that may constrict flow, cause blockage, and result in a dry weather overflow. For overflow outfalls that are inaccessible, the Discharger may perform a visual check of the overflow pipe to determine whether or not the overflow occurred or could potentially occur during dry weather flow conditions.
- Record in a maintenance log the results of the inspections.

iii. **Provision for Trained Staff.** The Discharger shall provide an adequate number of full-time equivalents to carry out the operation, maintenance, repair and testing functions required to ensure compliance with the terms and conditions of this permit. Each member of the staff shall receive appropriate training.

iv. **Allocation of Funds for Operation and Maintenance.** The Discharger shall allocate adequate funds specifically for operation and maintenance activities. The Discharger shall submit a certification of assurance that the necessary funds, equipment, and personnel have been or will be committed to carry out the Operations and Management (O&M) Plan.

b. **Maximize Use of the Collection System for Storage.** The Discharger shall continue to maximize the inline storage capacity. (Note: This provision refers to using the sewers for storage to the maximum extent possible. It does not refer to the storage/transports.)

c. **Review and Modify Pretreatment Program.** The Discharger shall continue to implement selected controls to minimize the impact of non-domestic discharges. The Discharger shall re-evaluate every 3 years whether additional modifications to its pretreatment program are feasible or of practical value. The Discharger shall keep records to document this evaluation and to document implementation of the selected controls to minimize non-domestic discharges.

d. **Maximize Flow to Southeast Water Pollution Control Plant and North Point Wet Weather Facility.** The Discharger shall operate the Southeast Water Pollution Control Plant at a maximum treatable flow during wet weather flow conditions. The Discharger shall report rainfall and flow data to the Board as part of the Self-Monitoring Report.

The Discharger has prepared a facilities operation plan. This operation plan was developed to achieve the following objectives:

i. Maximize the volume of wastewater treated (at either the Southeast Water Pollution Control Plant or North Point Wet Weather Facility and discharged via deep water

outfalls, consistent with the hydraulic capacities of the Discharger's storage, transport, treatment, and disposal facilities, and

ii. Assure that all discharges from the diversion structures are first baffled to reduce floatable volume.

e. **Prohibit Combined Sewer Overflows During Dry Weather.** Dry weather overflows from outfalls E-002 through E-006 and CSO structures CSO 009 through-043 are prohibited. All dry weather overflows must be reported to the Board within 24 hours of when the Discharger becomes aware of a dry weather overflow. When the Discharger detects a dry weather overflow, the Discharger shall begin corrective actions immediately.

The Discharger shall inspect the dry weather overflow point each subsequent day of the overflow until the overflow has been eliminated. The Discharger shall record in the inspection log each dry weather overflow event, as well as the cause, corrective measures taken, and the dates of the beginning and cessation of the overflow.

f. **Control Solid and Floatable Materials in CSOs.** The Discharger shall continue to implement measures to control solid and floatable materials in its overflows. These measures shall include:

i. Ensure that all overflows from the diversion structures are baffled or that other means are used to reduce the volume of floatable materials.

ii. Remove solid or floatable materials captured in the storage/transport in an acceptable manner prior to discharge to the receiving water.

g. **Develop and Implement Pollution Prevention Program.** The Discharger shall continue to implement a pollution prevention program focused on reducing the impact of treated and untreated overflows on receiving waters. This pollution prevention program is authorized by the Basin Plan and Federal Regulations on CSOs. The Discharger shall keep records to document pollution prevention implementation activities. This program shall be developed and implemented in accordance with Provision 8.Conducting street sweeping and catch basin modification or cleaning at a frequency that will prevent large accumulations of pollutants and debris.

h. **Notify the Public of Overflows.** The Discharger shall continue to implement a public notification plan to inform citizens of when and where overflows occur. The process must include:

i. A mechanism to alert persons using all receiving bodies of water affected by overflows.

ii. A system to determine the nature and duration of conditions that are potentially harmful to users of these receiving water bodies due to overflows.

Specifically, warning signs shall be posted at beach locations where water contact recreation is enjoyed by the public whenever there is a discharge from the diversion structures. Such warning signs shall be posted on the same days as the overflow unless the overflow occurs after 4:00 p.m., in which case the signs shall be posted by 8:00 a.m. the next day. The Discharger shall keep records documenting public notification.

The City's current notification process fulfills these requirements. The process includes permanent information signs at all beach locations around the perimeter of San Francisco. These signs inform the public in English, Spanish and Chinese that signs will be posted when it is unsafe to enter the water, and warns users that bacteria concentrations may be elevated during periods of heavy rainfall. NO SWIMMING signs are posted at beach

locations whenever an overflow occurs in the vicinity. These signs remain posted until water sampling indicates the bacteria concentration has dropped below the level of concern for water contact recreation. Both signs reference the City's toll free water quality hotline (1-877-SF BEACH) which is updated weekly or whenever beach conditions change. San Francisco also provides color coded descriptions of beach water quality conditions (green/open; yellow/caution; red/posted) on the web at http://www.sfpuc.com or http://www.earth911.org.

iii. The Discharger shall undertake a Recreational Use Study of the bayside beaches and water use areas (Candlestick Point Recreation Area, Aquatic Park Beach, Crissy Field Beach, Islais Creek and Mission Bay) in order to determine the number of users impacted from CSO events. The study will assess the current levels of recreational use of the shoreline and nearshore waters identifying types and frequency of use.

	Task	Compliance Date
(1)	Recreational Use Study Plan The Discharger shall develop and submit a study plan acceptable to the Executive Officer. The study shall at minimum encompass two full wet weather seasons in order to get adequate information relating to CSO events and use data. This special study will replace any standard observation requirements associated with shoreline bacteria monitoring.	January 15, 2003
(2)	Study Commencement	1st wet weather period after study approval
(3)	Final Report The Discharger shall submit a final report, acceptable to the Executive Officer, documenting the result of the Recreational Use Study.	1 year prior to permit expiration

i. **Monitor to Effectively Characterize Overflow Impacts and the Efficacy of CSO Controls.** The Discharger shall regularly monitor overflow outfalls to effectively characterize overflow impacts and efficacy of CSO controls.

	Task	Compliance Date
(1)	Study Plan The Discharger shall develop and submit a study plan acceptable to the Executive Officer. The study shall at minimum encompass two full wet weather seasons in order to get adequate information relating CSO events and use data. This special study will replace any routine overflow monitoring requirements.	January 15, 2003
(2)	Study Commencement	1st wet weather period after study approval
(3)	Final Report The Discharger shall submit a final report, acceptable to the Executive Officer, documenting the result of the Overflow Impacts and the CSO Control Efficacy Study.	1 year prior to permit expiration

Toxicity Requirements

11. **Acute Toxicity**

Compliance with acute toxicity requirements of this Order shall be achieved in accordance with the following:

a. From permit adoption date to **June 30, 2003**:
   (1) Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour continuous flow-through bioassays.
   (2) Test organisms shall be three-spined sticklebacks unless specified otherwise in writing by the Executive Officer.
   (3) All bioassays shall be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms," 3rd Edition, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

b. From **July 1, 2003** on:
   (1) Compliance with the acute toxicity effluent limits of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour continuous flow-through bioassays, or static renewal bioassays. If the Discharger will use static renewal tests, or continue to use 3rd Edition Methods, they must submit a technical report by March 1, 2003, identifying the reasons why flow-through bioassay is not feasible using approved EPA protocol specified in 40CFR 136 (currently 4th edition).
   (2) Test organisms shall be fathead minnows or rainbow trout unless specified otherwise in writing by the Executive Officer.
   (3) All bioassays shall be performed according to the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms" as specified in 40CFR 136. Exceptions may be granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

12. **Whole Effluent Chronic Toxicity Requirements**

The Discharger shall monitor and evaluate effluent discharged from dry weather E-001 to lower San Francisco Bay for chronic toxicity in order to demonstrate compliance with the Basin Plan narrative toxicity objective. Compliance with this requirement shall be achieved in accordance with the following.

a. The Discharger shall conduct routine chronic toxicity monitoring in accordance with the SMP of this Order.
b. If data from routine monitoring exceed either of the following evaluation parameters, then the Discharger shall conduct accelerated chronic toxicity monitoring. Accelerated monitoring shall consist of monitoring at frequency intervals of one half the interval given for routine monitoring in the SMP of this Order.
c. Chronic toxicity evaluation parameters:
   (1) a three sample median value of 10 TU_c [3]; and
   (2) a single sample maximum value of 20 TU_c [3].
   (3) These parameters are defined as follows:
      (a) Three-sample median: A test sample showing chronic toxicity greater than 10 TU_c represents an exceedance of this parameter, if one of the past two or fewer tests also show chronic toxicity greater than 10 TU_c.
      (b) TU_c (chronic toxicity unit): A TU_c equals 100/NOEL (e.g., If NOEL = 100, then toxicity = 1 TUc). NOEL is the no observed effect level determined from IC, EC, or NOEC values [c].
      (c) The terms IC, EC, NOEL and NOEC and their use are defined in Attachment C of this Order.

d. If data from accelerated monitoring tests are found to be in compliance with the evaluation parameters, then routine monitoring shall be resumed.
e. If accelerated monitoring tests continue to exceed either evaluation parameter, then the Discharger shall initiate a chronic toxicity reduction evaluation (TRE).
f. The TRE shall be conducted in accordance with the following:
   (1) The Discharger shall prepare and submit to the Board for Executive Officer approval a TRE work plan. An initial generic workplan shall be submitted within 120 days of the date of adoption of this Order. The workplan shall be reviewed and updated as necessary in order to remain current and applicable to the discharge and discharge facilities.
   (2) The TRE shall be initiated within 30 days of the date of completion of the accelerated monitoring test observed to exceed either evaluation parameter.
   (3) The TRE shall be conducted in accordance with an approved work plan.
   (4) The TRE needs to be specific to the discharge and Discharger facility, and be in accordance with current technical guidance and reference materials including U.S. EPA guidance materials. TRE shall be conducted as a tiered evaluation process, such as summarized below:
      (a) Tier 1 consists of basic data collection (routine and accelerated monitoring).
      (b) Tier 2 consists of evaluation of optimization of the treatment process including operation practices, and in-plant process chemicals.
      (c) Tier 3 consists of a toxicity identification evaluation (TIE).
      (d) Tier 4 consists of evaluation of options for additional effluent treatment processes.
      (e) Tier 5 consists of evaluation of options for modifications of in-plant treatment processes.
      (f) Tier 6 consists of implementation of selected toxicity control measures, and follow-up monitoring and confirmation of implementation success.
   (5) The TRE may be ended at any stage if monitoring finds there is no longer consistent toxicity.
   (6) The objective of the TIE shall be to identify the substance or combination of substances causing the observed toxicity. All reasonable efforts using currently available TIE methodologies shall be employed.
   (7) As toxic substances are identified or characterized, the Discharger shall continue the TRE by determining the source(s) and evaluating alternative strategies for reducing or eliminating the substances from the discharge. All reasonable steps shall be taken to reduce toxicity to levels consistent with chronic toxicity evaluation parameters.
   (8) Many recommended TRE elements parallel required or recommended efforts of source control, pollution prevention and storm water control programs. TRE efforts should be coordinated with such efforts. To prevent duplication of efforts, evidence of complying with requirements or recommended efforts of such programs may be acceptable to comply with TRE requirements.
   (9) The Board recognizes that chronic toxicity may be episodic and identification of causes of and reduction of sources of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based in part on the Discharger's actions and efforts to identify and control or reduce sources of consistent toxicity.
g. Chronic Toxicity Monitoring Screening Phase Requirements, Critical Life Stage Toxicity Tests and definitions of terms used in the chronic toxicity monitoring are identified in Attachment A of the SMP. The Discharger shall comply with the chronic toxicity screening requirements specified in this attachment as applicable to the discharge.

Ongoing Programs

13. **Regional Monitoring Program**

The Discharger shall continue to participate in the Regional Monitoring Program (RMP) for trace substances in San Francisco Bay in lieu of more extensive effluent and receiving water self-monitoring requirements that may be imposed.

14. **Pretreatment Program**

Pretreatment Program: The Discharger shall implement and enforce its approved pretreatment program in accordance with Federal Pretreatment Regulations (40 CFR 403), pretreatment standards promulgated under Section 307(b), 307(c), and 307(d) of the Clean Water Act, and the requirements in **Attachment F**, "Pretreatment Requirements." The Discharger's responsibilities include, but are not limited to:

a. Enforcement of National Pretreatment Standards in accordance with 40 CFR 403.5 and 403.6;

b. Implementation of its pretreatment program in accordance with legal authorities, policies, procedures and financial provisions described in the General Pretreatment regulations (40 CFR 403) and the Discharger's approved pretreatment program;

c. Submission of reports to, the State Board and the Board, as described in **Attachment F,** "Pretreatment Requirements;"

The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this permit. If the Discharger fails to perform the pretreatment functions, the Regional Water Quality Control Board (RWQCB), the State Waters Resources Control Board (SWRCB), or the United States Environmental Protection Agency (U.S. EPA) may take enforcement actions against the Discharger as authorized by the Clean Water Act.

Optional Studies

15. **Optional Mass Offset**

The Discharger may submit to the Board for approval a mass offset plan to reduce 303(d) listed pollutants to the same watershed or drainage basin. The Board may modify this Order to allow an approved mass offset program.

16. **Copper Translator Study and Schedule**

In order to develop information that may be used to establish a water quality based effluent limit based on dissolved copper criteria, the Discharger may utilize RMP data from stations nearest the Discharger's outfall. Copper translator will be calculated as part of the technical work being conducted for the central San Francisco copper/nickel TMDL/SSO project. Optionally, the Discharger may implement a sampling plan to collect data for development of a dissolved to total copper translator. If the Discharger chooses to proceed with the study, which may be conducted in cooperation with other Dischargers, the work shall be performed in accordance with the following tasks:

Task

a. Copper Translator Study Plan.
The Discharger shall submit a study plan, acceptable to the Executive Officer, for collection of data that can be used for establishment of a dissolved to total copper translator, as discussed in the Findings.

b. After Executive Officer approval, the Discharger shall begin implementation of the study plan. The study plan shall provide for development of translators in accordance with the State Board's SIP, EPA guidelines, California Department of Fish and Game approval, and any relevant portions of the Basin Plan, as amended.

c. Copper Translator Final Report
The Discharger shall conduct the translator study by using field sampling data approximate to the discharge point and in the vicinity of the discharge point, or as otherwise provided for in the approved work plan, and shall submit a report, acceptable to the Executive Officer, no later than November 30, 2003, documenting the results of the copper translator study. The study may be conducted in coordination with other Dischargers and may also include any other site specific information that the Discharger would like the Board to consider in development of a water quality based effluent limitation for copper.

Facilities Status Reports and Permit Administration

17. **Wastewater Facilities, Review and Evaluation, and Status Reports**
    a. The Discharger shall operate and maintain its wastewater collection, treatment and disposal facilities in a manner to ensure that all facilities are adequately staffed, supervised, financed, operated, maintained, repaired, and upgraded as necessary, in order to provide adequate and reliable transportation, treatment, and disposal of all wastewater from both existing and planned future wastewater sources under the Discharger's service responsibilities.
    b. The Discharger shall regularly review and evaluate its wastewater facilities and operation practices in accordance with section a. above. Reviews and evaluations shall be conducted as an ongoing component of the Discharger's administration of its wastewater facilities.
    c. Annually, the Discharger shall submit to the Board a report describing the current status of its wastewater facility review and evaluation, including any recommended or planned actions and an estimated time schedule for these actions. This report shall include a description or summary of review and evaluation procedures, and applicable wastewater facility programs or capital improvement projects. This report shall be submitted in accordance with the Annual Status Report Provision below.

18. **Operations and Maintenance Manual, Review and Status Reports**
    a. The Discharger shall maintain an Operations and Maintenance Manual (O & M Manual) as described in the findings of this Order for the Discharger's wastewater facilities. The O & M Manual shall be maintained in useable condition, and available for reference and use by all applicable personnel.
    b. The Discharger shall regularly review, and revise or update as necessary, the O & M Manual(s) in order for the document(s) to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and revisions or updates shall be completed as necessary. For any significant changes in treatment facility equipment or operation practices, applicable revisions shall be completed within 90 days of completion of such changes.
    c. Annually, the Discharger shall submit to the Board a report describing the current status of its O & M Manual review and updating. This report shall include an estimated time schedule for completion of any revisions determined necessary, a description of any completed revisions, or a statement that no revisions are needed. This report shall be submitted in accordance with the Annual Status Report Provision below.

19. **Contingency Plan, Review and Status Reports**
    a. The Discharger shall maintain a Contingency Plan as required by Board Resolution 74-10 (Attachment G), and as prudent in accordance with current municipal facility emergency planning. The discharge of pollutants in violation of this Order where the Discharger has failed to

develop and/or adequately implement a contingency plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.

b. The Discharger shall regularly review, and update as necessary, the Contingency Plan in order for the plan to remain useful and relevant to current equipment and operation practices. Reviews shall be conducted annually, and updates shall be completed as necessary.

c. Annually, the Discharger shall submit to the Board a report describing the current status of its Contingency Plan review and update. This report shall include a description or copy of any completed revisions, or a statement that no changes are needed. This report shall be submitted in accordance with the Annual Status Report Provision below.

20. **Annual Status Reports**
The reports identified above in Provisions **F.17.c, F.18.c, and F.19.c** shall be submitted to the Board annually, by July 15 th of each year. Modification of report submittal dates may be authorized, in writing, by the Executive Officer.

21. **303(d)-listed Pollutants Site-Specific Objective and TMDL Status Review**
The Discharger shall participate in the development of a TMDL or site-specific objective for copper, mercury, 4,4-DDE, and dieldrin. By January 31 of each year, the Discharger shall submit an update to the Board to document efforts made on participation in development of TMDL or site-specific objective. Board staff shall review the status of TMDL development. This Order may be reopened in the future to reflect any changes required by the TMDL development.

22. **New Water Quality Objectives**
As new or revised water quality objectives come into effect for the Bay and contiguous water bodies (whether statewide, regional or site-specific), effluent limitations in this Order will be modified as necessary to reflect updated water quality objectives. Adoption of effluent limitations contained in this Order are not intended to restrict in any way future modifications based on legally adopted water quality objectives.

23. **Self-Monitoring Program**
The Discharger shall comply with the Self-Monitoring Program (SMP) for this Order as adopted by the Board. The SMP may be amended by the Executive Officer pursuant to U.S. EPA regulations 40CFR 122.62, 122.63 and 124.5.

24. **Standard Provisions and Reporting Requirements**
The Discharger shall comply with all applicable items of the *Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993* (attached), or any amendments thereafter. Where provisions or reporting requirements specified in this Order are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications of this Order shall apply.

25. **Change in Control or Ownership**

a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Board.

b. To assume responsibility of and operations under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order (see *Standard Provisions & Reporting Requirements*, August 1993, Section E.4.). Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

26. **Permit Reopener**
The Board may modify, or revoke and reissue, this Order and Permit if present or future investigations demonstrate that the discharge(s) governed by this Order will or have the potential to cause or contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters.

27. **NPDES Permit**
This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective on July 1, 2002 provided the U.S. EPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

28. **Order Expiration and Reapplication**
    a. This Order expires on May 31, 2007.
    b. In accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code, the Discharger must file a report of waste discharge no later than 180 days before the expiration date of this Order as application for reissue of this permit and waste discharge requirements.

I, Loretta K. Barsamian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on June 19, 2002.

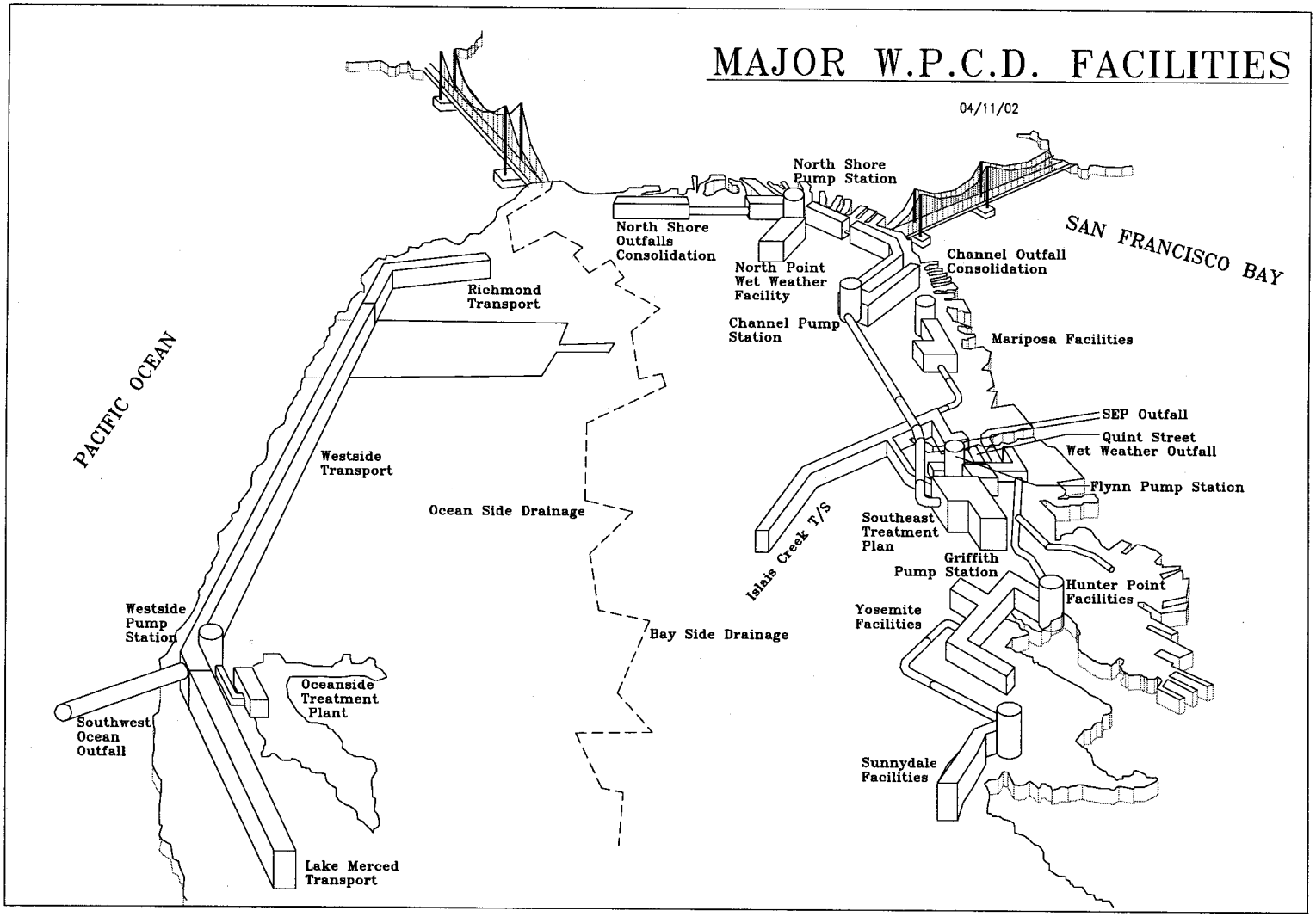
LORETTA K. BARSAMIAN
Executive Officer

Attachments:
A. Discharge Facility Location Map
B. Combined Sewer Overflow Structures
C. Discharge Facility Treatment Process Diagram
D. Self-Monitoring Program, Part B
E. Factsheet
F. Pretreatment Program Requirements

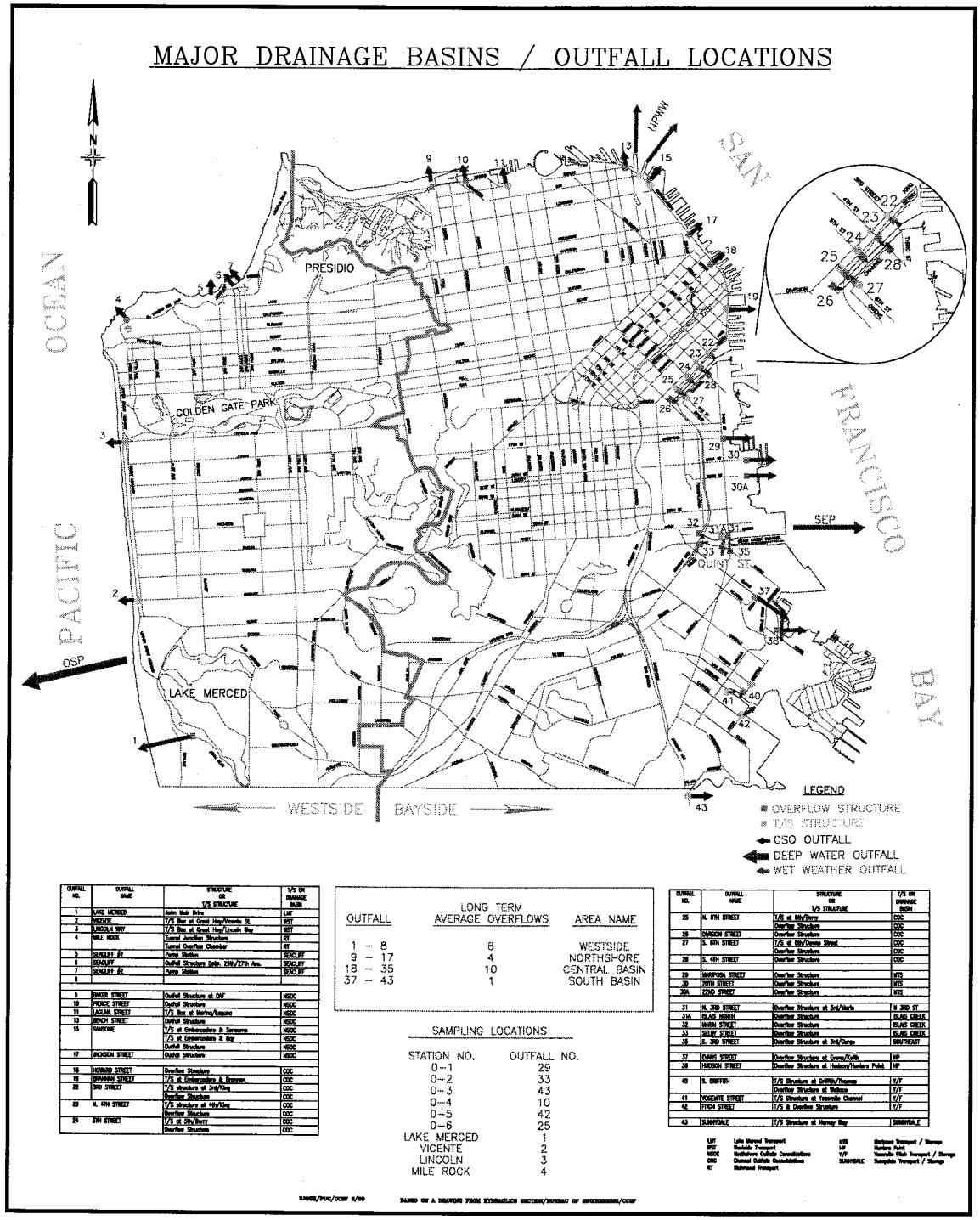
The following attachments are part of this Order, but are not attached because of volume. These documents are available on the Board's website at www.swrcb.ca.gov/rwqcb2, or by calling the Board at (510) 622-2300.

G. Self-Monitoring Program Part A, August 1993
H. Standard Provisions and Reporting Requirements, August 1993
I. Board Resolution No. 74-10
J. August 6, 2001 Regional Board staff letter, "Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy"

Attachment A - Discharge Facility Location Map



Attachment B – Combined Sewer Overflow Structures

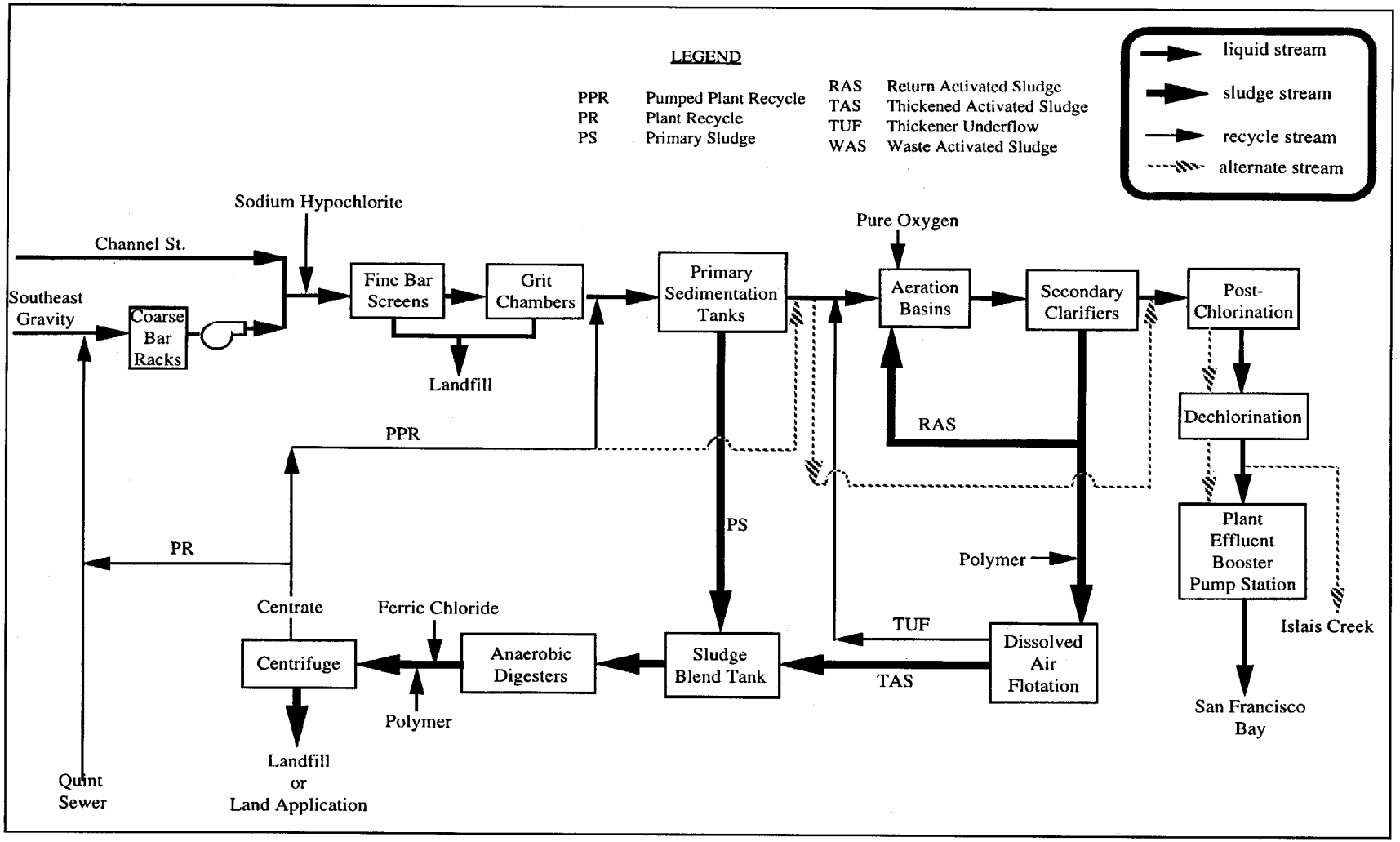


OUTFALL	LONG TERM AVERAGE OVERFLOWS	AREA NAME
1 – 8	8	WESTSIDE
9 – 17	4	NORTHSHORE
18 – 35	10	CENTRAL BASIN
37 – 43	1	SOUTH BASIN

SAMPLING LOCATIONS

STATION NO.	OUTFALL NO.
0-1	29
0-2	33
0-3	43
0-4	10
0-5	42
0-6	25
LAKE MERCED	1
VICENTE	2
LINCOLN	3
MILE ROCK	4

Attachment C - Discharge Facility Treatment Process Diagram



Attachment D – Self-Monitoring Program, Part B

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

CITY AND COUNTY OF SAN FRANCISCO

SOUTHEAST WATER POLLUTION CONTROL PLANT,

NORTH POINT WET WEATHER FACILITY, AND

BAYSIDE WET WEATHER FACILITIES

SAN FRANCISCO COUNTY

NPDES PERMIT NO. CA0037664

ORDER NO. R2-2002-0073

Consists of:

Part A, Adopted August 1993 (not attached)

And

Part B

Adopted: June 19, 2002

Table Of Contents

List of Tables

Part B

I. Station Descriptions

NOTE: The Discharger shall submit a sketch showing the locations of all sampling and observation stations with the Annual Report, and with the monthly report if stations change.

A. Influent

Station	Description
Southeast Water Pollution Control Plant Station:	
A-001	At any point in facilities upstream of the primary sedimentation basins at which all waste tributary to the treatment system is present, and preceding any phase of treatment.
North Point Wet Weather Facility:	
A-002	At any point at which all waste tributary to the system is present and preceding any phase of treatment.

B. Effluent

Station	Description
Southeast Water Pollution Control Plant Stations	
Waste	**Under Dry Weather Discharge Conditions**:
E-001	At any point in the sewerage system, between the point of discharge and the point at which all wastes have gone through complete secondary treatment, including disinfection.
	Under Wet Weather Discharge Conditions: At any point in the sewerage system, between the point of discharge and the point at which adequate contact with the disinfectant is assured.
E-001D	At any point in the disinfection facilities at which point adequate contact with the disinfectant is assured (may be the same location as E-001).
Waste E002	Wet weather discharge only, at any point in the sewerage system, between the point of discharge into Islais Creek and the point at which all wastes have gone through complete secondary treatment, including disinfection.
E-002D	At any point in the disinfection facilities at which point adequate contact with the disinfectant is assured (may be the same location as E-002).
North Point Wet Weather Facility:	
Waste E-003	At any point in the facility system between the point of discharge to Pier 33 (E-003 & E-004) and Pier 35 (E-005 & E-006) outfalls and the point at which all waste tributary to those outfalls is present.
E-003D	At any point in the disinfection facilities for Waste E-003 at which point adequate contact with the disinfectant is assured (may be the same as E-003).

C. Shoreline Stations

Station (As shown in Figure 1)	Description
S-202.2	Crissy Field Central
S-202.4	Crissy Field (east of Lagoon)
S-210.1	Aquatic Park Beach (Hyde St. Pier)
S-211	Aquatic Park Beach East End
S-300.1	Candlestick Point SRA (Sunnydale Cove Beach)
S-301.1	Candlestick Point SRA (Windsurfing Circle)
S-301.2	Candlestick Point SRA (Jack Rabbit Beach)

II. Schedule of Sampling, Analyses And Observations

The schedule of sampling, analyses and observations shall be that given in Table 1 below. Sampling and analysis of additional constituents is required pursuant to Table 1 of the Regional Board's August 6, 2001 letter.

Table 1 Schedule Of Sampling, Analyses And Observations [1]

				A-001 Southeast Influent	A-002 North Point Wet Weather Influent		E-001 Southeast Dry Weather Outfall		E-001, E-002 & E-003 Southeast & North Point Wet Weather Outfalls		Shoreline Stations
CTR No.	Parameter	Units	Note	C-24	G	C-24	G	C-24	G	C-X	G
	Flow Rate	MGD	[2]	Cont./D		Cont./ E		Cont./ D		Cont. /E	
	pH	pH Units					5/W				
	BOD_5 20°C	mg/L	[15]	W				W			
	COD		[15]	5/W				5/W		[13]	
	TSS	mg/L		5/W				5/W			
	Oil &Grease	mg/L	[3]			E	M		[13]		
	Settleable Matter	ml/L-hr					M			[13]	
	Fecal Coliform [11]	CFU/ 100ml					5/W		E [12]		W [14]
	Total Coliform	MPN/ 100ml									W [14]
	Chlorine Residual	mg/L	[4]				Cont. or 2H		Cont. or 2H		
	Acute Toxicity	Percent survival	[5]					M		[13]	
	Chronic Toxicity	TUc	[6]					2/Y			
6	Copper	µg/L						M		[13]	
7	Lead	µg/L						M		[13]	
8	Mercury	µg/L	[7]					M		[13]	
9	Nickel	µg/L						M		[13]	
11	Silver	µg/L						M		[13]	
13	Zinc	µg/L						M		[13]	
14	Cyanide	µg/L	[8]				M			[13]	
68	Bis (2-ethylhexyl) Phthalate	µg/L					Q				
110	4,4 DDE	pg/L	[9]				2/Y				
111	Dieldrin	pg/L	[9]				2/Y				
	Dioxin and Furans	pg/L	[9]				2/Y				
	Tributyltin	µg/L					Q				
	Pretreatment Requirements	µg/L or ppb	[10]								

LEGEND FOR TABLE 1

Sampling Stations			Type of samples		
A	=	Treatment Facility Influent	G	=	Grab Sample
E	=	Treatment Facility Effluent	C-24	=	Composite Sample, 24 hours (including continuous sampling such as flows)
S	=	Shoreline Monitoring	C-X	=	Composite sample, X hours

Frequency of Sampling					
E	=	Each Occurrence	M	=	Once Each Month
Q	=	Quarterly	2H	=	Once Every Two Hours
W	=	Once Each Calendar Week	2/Y	=	Twice Each Year (on separate days, once during the dry weather season and once during the wet weather season)
3/W	=	Three Times Each Calendar Week (on separate days)	D	=	Daily
5/W	=	Five Times Each Calendar Week (on separate days)	Cont.	=	Continuous

FOOTNOTES FOR TABLE 1

[1] Additional details regarding sampling, analyses and observations are given in Section III of this SMP, Specifications for Sampling, Analyses and Observations.

[2] Flow Monitoring.

Continuous flow monitoring depicted in Table 1 shall be conducted by continuous measurement and reporting of the following parameters:

Influent (A-001), and Effluent (E-001):

Daily:

Average Daily Flow (mgd)

Maximum Daily Flow (mgd)

Minimum Daily Flow (mgd).

Monthly: Average Monthly Flow (mgd), for the calendar month.

[3] Oil & Grease Monitoring.

During dry weather, each Oil & Grease sample event shall consists of a composite sample comprised of three grab samples taken at equal intervals during the sampling date, with each grab sample being collected in a glass container. During wet weather, each Oil & Grease sample even shall consists of a composite sample comprised of three grab samples taken at appropriate intervals during the sample date, with each grab sample being collected in a glass container. The grab samples shall be mixed in proportion to the instantaneous flow rates occurring at the time of each grab sample, within an accuracy of plus or minus 5 %. Each glass container used for sample collection or mixing shall be thoroughly rinsed with solvent as soon as possible after use, and the solvent rinsate shall be added to the composite sample for extraction and analysis.

[4] Disinfection Process Monitoring.

Chlorine Residual Monitoring.

During all times when chlorination is used for disinfection of the effluent, effluent chlorine residual concentrations shall be monitored continuously, or by grab samples taken every two hours. Grab samples may be taken by hand or by automated means using in-line equipment such as three-way valves and chlorine residual analyzers. Chlorine residual concentrations shall be monitored and reported for sampling points both prior to and following dechlorination. Chlorine dosage (kg/day) and dechlorination chemical dosage and/or residual (if desired to demonstrate chlorine exceedances are false positives) shall be recorded on a daily basis.

[5] Acute Toxicity Monitoring (Flow-through bioassay tests).

The following parameters shall be monitored on the sample stream used for the acute toxicity bioassays, at the start of the bioassay test and daily for the duration of the bioassay test, and the results reported:

-
- pH,
- temperature,
- dissolved oxygen,
- and ammonia nitrogen.

If the fish survival in the effluent is less than 70% or if the control fish survival rate is less than 90%, a bioassay test shall be restarted with a new batch of fish and continued as soon as practicable until compliance is demonstrated.

[6] Chronic Toxicity Monitoring: See also, Provision F.12. and Attachment A of this Order.

Chronic Toxicity Monitoring Requirements

Sampling. The discharger shall collect 24-hour composite samples of treatment plant effluent at Sampling Station E-001 (dry weather), for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.

Test Species: Chronic toxicity shall be monitored using critical life stage test(s) and the most sensitive test specie(s) identified by screening phase testing.. Test specie(s) shall be approved by the Executive Officer. Two test species may be required if test data indicate that there is alternating sensitivity between the two species. Currently, the Discharger found that echinoderm as the most sensitive specie. The Discharger may remove ammonia from the effluent prior to toxicity testing.

Frequency:

i. *Routine Monitoring*: If the discharge demonstrates chronic toxicity during routine monitoring, accelerated monitoring will be required. However, if the discharge demonstrates no chronic toxicity in excess of the triggers specified in the "Conditions for Accelerated Monitoring" subsection below, the monitoring frequency will be twice per year during the next five years, once during wet weather, and once during dry weather.

ii. *Accelerated Monitoring*: Quarterly, or as otherwise specified by the Executive Officer.

Methodology: Sample collection, handling and preservation shall be in accordance with U.S. EPA protocols. The test methodology used shall be in accordance with the references cited in this Permit, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.

Dilution Series: The discharger shall conduct tests at 2%, 5%, 10%, 15%, and 30%. The "%" represents percent effluent as discharged.

Chronic Toxicity Reporting Requirements

Routine Reporting:

Toxicity test results for the current reporting period shall include, at a minimum, for each test:

- a. sample date(s)
- b. test initiation date
- c. test species
- d. end point values for each dilution (e.g. number of young, growth rate, percent survival)
- e. NOEC value(s) in percent effluent
- f. IC15, IC25, IC40, and IC50 values (or EC15, EC25 ... etc.) in percent effluent
- g. TUc values (100/NOEC, 100/IC25, and 100/EC25)
- h. Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)
- i. NOEC and LOEC values for reference toxicant test(s)
- j. IC50 or EC50 value(s) for reference toxicant test(s)
- k. Available water quality measurements for each test (ex. pH, D.O., temperature, conductivity, hardness, salinity, ammonia)

Compliance Summary: The results of the chronic toxicity testing shall be provided in the most recent self-monitoring report and shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include the items listed above under *Chronic Toxicity Reporting Requirements*, items a, c, e, f (IC_{25} or EC_{25}), g, and h.

[7] Use ultra-clean sampling to the maximum extent practicable and analytical methods for mercury monitoring pursuant to the Regional Board's 13267 letters issued to discharger. ML for compliance purposes is as listed in Table 2 below until the State Board adopts an alternative minimum level. Alternative methods of analysis must be approved by the Executive Officer.

[8] The discharger may, at their option, analyze for cyanide as Weak Acid Dissociable Cyanide using protocols specified in Standard Method Part 4500-CN-I, U.S. EPA Method OI 1677, or equivalent alternatives in latest edition. Alternative methods of analysis must be approved by the Executive Officer.

[9] See Table 2 below. This pollutant shall be monitored twice per year, once in dry season and once in wet season on a "dry weather" day as defined by this permit. Analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to respective water quality objectives.

[10] Pretreatment Program Requirements: see Table 3 below.

[11] Report the running 30 day median fecal coliform bacteria density per 100 ml, and the percent fecal coliform greater than 1100/100 mL in the same 30 day period. Sample shall be collected during period of maximum flow and at a time when sampling for chlorine residual.

[12] The fecal coliform effluent sample collected from wet weather discharges shall be collected within 4 hours after discharge start (between 4:00 AM and 2:00 PM); sample shall be collected first thing in the morning if the wet weather facility begins operation after 2:00 PM. When calculating 30 day moving median, effluent concentration shall assume to be zero on days of no discharge.

[13] Sample the first and second events of the season and then sample monthly when wet weather facilities are operational.

[14] May be satisfied by measuring *E. coli* as recommended in the EPA Beach Monitoring Program. Total coliform bacteria and *E. coli* may be measured using the *Colisure* method of analysis.

[15] The Discharger will analyze COD five times per week. If the effluent COD concentration exceeds 75 mg/L on two consecutive days, the Discharger will initiate daily BOD sampling until it is show that the effluent BOD concentration is below a concentration of 30 mg/L.

Table 2 Minimum Levels (µg/l or ppb)

For compliance monitoring, analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to the Minimum Levels given below.

CTR #	Constituent [a]	Types of Analytical Methods [b]											
		GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGF AA	HYD RIDE	CVAA	DCP
6.	Copper [c]					25	5	10	0.5	2			1000
7.	Lead					20	5	5	0.5	2			10,000
8.	Mercury[d]								0.5			0.2	
9.	Nickel					50	5	20	1	5			1000
11.	Silver					10	1	10	0.25	2			1000
13.	Zinc					20		20	1	10			
14.	Cyanide				5								
68.	Bis(2-ethylhexyl)Phthalate	10	5										
111	Dieldrin	0.01											
109.	4,4'-DDE	0.05											

CTR #	Constituent [a]	Types of Analytical Methods [b]											
		GC	GCMS	LC	Color	FAA	GFAA	ICP	ICP MS	SPGFAA	HYD RIDE	CVAA	DCP
	Tributyltin [e]												
	Dioxins and Furans [f]												

Footnotes to Table 2 of Self-Monitoring Program:

a.) According to the SIP, method-specific factors (MSFs) can be applied. In such cases, this additional factor must be applied in the computation of the reporting limit. Application of such factors will alter the reported ML (as described in section 2.4.1). Dischargers are to instruct laboratories to establish calibration standards so that the ML value is the lowest calibration standard. At no time is the discharger to use analytical data derived from the extrapolation beyond the lowest point of the calibration curve.

b.) Laboratory techniques are defined as follows: GC = Gas Chromatography; GCMS = Gas Chromatography/Mass Spectrometry; LC = High Pressure Liquid Chromatography; Color = Colorimetric; FAA = Flame Atomic Absorption; GFAA = Graphite Furnace Atomic Absorption; Hydride = Gaseous Hydride Atomic Absorption; CVAA = Cold Vapor Atomic Absorption; ICP = Inductively Coupled Plasma; ICPMS = Inductively Coupled Plasma/Mass Spectrometry; SPGFAA = Stabilized Platform Graphite Furnace Atomic Absorption (i.e. EPA 200.9); DCP = Direct Current Plasma.

c.) For copper, the discharger may also use the following laboratory techniques with the relevant minimum level: GFAA with a minimum level of 5 µg/L and SPGFAA with a minimum level of 2 µg/L.

d.) Use ultra-clean sampling (EPA 1669) to the maximum extent practicable, and ultra-clean analytical methods (EPA 1631) for mercury monitoring. The Discharger may use alternative methods of analysis (such as EPA 245), if that alternate method has a Minimum Level of 2 ng/l or less.

e.) The Discharger should continue using the same analytical procedures to achieve the method detection limit of 0.002 ug/L. Board staff is working with the Discharger (through BACWA), to determine a minimum level compliance determination.

f.) The Discharger shall use EPA method 1613. Compliance shall be determined using only values that are at or above the lowest calibration standard. Board staff is working with the Discharger through BACWA, and the State Board to determine minimum levels for these compounds.

Table 3 Southeast Pretreatment Monitoring Requirements

Constituents / EPA Method	Influent A-001	Effluent E-001	Sludge
VOC / 624	2/Y	2/Y	
BNA / 625	2/Y	2/Y	
Metals [1]	M	M	
O-Pest / 614	N/A	N/A	
C-Pest / 632	N/A	N/A	
Sludge [2]			2/Y

Definition of terms in Table 3:

M	=	once each month
2/Y	=	twice each calendar year (at about 6 month intervals, once in the dry season, once in the wet season)
VOC	=	volatile organic compounds
BNA	=	base/neutrals and acids extractable organic compounds
O-Pest	=	organophosphorus pesticides, no monitoring required for this constituent
C-Pest	=	carbamate and urea pesticides, no monitoring required for this constituent

Key to notes used in Table 3:

[1] Same EPA method used to determine compliance with the respective NPDES permit. The parameters are copper, lead, mercury, nickel, silver, zinc, and cyanide.

[2] EPA approved methods.

III. Specifications For Sampling, Analyses And Observations

Sampling, analyses and observations, and recording and reporting of results shall be conducted in accordance with the schedule given in Table 1 of this SMP, and in accordance with the following specifications, as well as all other applicable requirements given in this SMP. All analyses shall be conducted using analytical methods that are commercially and reasonably available, and that provide quantification of sampling parameters and constituents sufficient to evaluate compliance with applicable effluent limits.

A. Influent Monitoring.

Influent monitoring identified in Table 1 of this SMP is the minimum required monitoring. Additional sampling and analyses may be required in accordance with Pretreatment Program or Pollution Prevention/Source Control Program requirements.

B. Effluent Monitoring.

Composite samples of effluent shall be collected on varying days of the week (Monday through Friday, excluding holidays) coincident with influent composite sampling unless otherwise stipulated. The Executive Officer may approve an alternative sampling plan if it is demonstrated to the Executive Officer's satisfaction that expected operating conditions for the facility warrant a deviation from the standard sampling plan.

Grab samples of effluent shall be collected during periods of maximum peak flows and shall coincide with effluent composite sample days.

Fish bioassay samples shall be collected on days coincident with effluent composite sampling.

Bioassay tests should be performed on effluent samples after chlorination-dechlorination.

Total ammonia nitrogen shall be analyzed and un-ionized ammonia calculated whenever fish bioassay test results fail to meet the specified percent survival.

If any maximum daily limit is exceeded, the sampling frequency shall be increased to daily until two samples collected on consecutive days show compliance with the maximum daily limit.

If the final or intermediate results of any single bioassay test indicate a threatened violation (i.e. the percentage of surviving test organisms is less than the required survival percentage), a new test will begin and the discharger shall investigate the cause of the mortalities and report the finding in the next self-monitoring report.

Chlorine residual analyzers shall be calibrated against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, grab samples shall be collected at least every 30 minutes until compliance is achieved.

IV. Reporting Requirements

A. General Reporting Requirements are described in Section E of the Regional Board's "*Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits*", dated August 1993.

B. Modifications to Self-Monitoring Program, Part A:

1. If any discrepancies exist between Part A and Part B of the SMP, Part B prevails.

2. The following sections of Part A: C.3., C.4., C.5. are satisfied by participation in the Regional Monitoring Program.

3. The following sections of Part A: D.4., and E.3, are exclusions to the Self- Monitoring Program.

4. Section C.2.a of Part A, shall be modified as follows:

   If additional influent or effluent sampling beyond that required in Table 1 of Part B is done voluntarily or to fulfill any requirements in this permit other than those specified in Table 1 or Part B, corresponding collection of effluent or influent samples is not required by this section. The Executive Officer may approve an alternative sampling plan if it is demonstrated to be representative of plant discharge flow and in compliance with all other requirements of this permit.

5. Section C.2.b of Part A shall be modified as follows:

   Grab samples of effluent shall be collected during periods of maximum peak flows at a frequency specified in Table 1 of Part B, shall coincide with effluent composite sample days, and shall be analyzed for the constituents specified in Table 1.

6. Section C.2.c of Part A shall be modified as follows (C.2.c(1) and (2) are unchanged):

   Effluent sampling will occur on at least one day of any multiple-day flow-through bioassay test required by Table 1 in Part B.

7. Section C.2.d. of Part A shall be modified as follows:

   If two consecutive samples of a constituent monitored on a weekly or monthly basis in a 30 day period exceed the monthly average effluent limit for any parameter, (or if the required sampling frequency is once per month and the monthly sample exceeds the monthly average limit), the sampling frequency shall be repeated once within 24 hours after results are received that indicate an exceedance of the monthly average effluent limit for that parameter. Repeat sampling shall occur in this way until the additional sampling shows two consecutive samples are in compliance with the monthly average limit

8. Section C.2.h of Part A shall be amended as follows:

When any dry weather bypass occurs, composite samples shall be collected on a daily basis for all constituents at all affected discharge points which have effluent limits for the duration of the bypass.

9. Section D.1 of Part A, insert the following:

   The requirements of this section only apply when receiving water standard observations are specified in table 1 of Part B. Receiving water standard observations are not specified in Table 1 of Part B of this permit. Therefore, the requirements of this section do not apply.

10. Section D.3 of Part A, insert the following:

    The Discharger will conduct a study of recreational uses on the bayside of the City over the course of this permit issuance. This comprehensive study will assess the current levels of recreational use of the shoreline and nearshore waters identifying types and frequency of use, and will substitute for standard shoreline observations.

11. Section D.5 of Part A, insert the following:

    The requirements of this section only apply when facility periphery standard observations are specified in Table 1 of Part B. Facility periphery standard observations are not specified in Table 1 of Part B of this permit. Therefore, the requirements of this section do not apply.

12. Section G. of Part A, Definition of Terms, amend as follows:

    a. *Grab Sample.* A grab sample is defined as an individual sample collected in a short period of time not exceeding fifteen minutes. A grab sample represents only the conditions that exist at the time the sample is collected. Grab samples shall be collected during normal peak loading conditions for the parameter of interest, which may not necessarily correspond with periods of peak hydraulic conditions. Grab samples are used primarily in determining compliance with daily and instantaneous maximum or minimum limits.

    b. *Composite Sample.* A composite sample is defined as a sample composed of individual grab samples collected manually or by an autosampling device on the basis of time and/or flow as specified in Table 1 of Part B. For flow-based compositing, the proportion of each grab sample included in the composite sample shall be within plus or minus five percent from the representative flow rate of the waste stream being sampled measured at the time of grab sample collection. Alternately, equal volume grab samples may be individually analyzed and the flow-weighted average calculated by averaging flow-weighted ratios of each grab sample analytical result. Grab samples forming time-based composite samples shall be collected at intervals not greater than those specified in Table 1 of Part B. The quantity of each grab sample forming a time-based composite sample shall be a set or flow proportional volume as specified in Table 1 of Part B. For Oil and Grease a minimum of three grab samples, one every eight hours over a 24-hour period shall be used. If a particular time or flow-based composite sampling protocol is not specified in Table 1 of Part B, the discharger shall determine and implement the most representative sampling protocol for the given parameter subject to approval by the Executive Officer.

    c. *Average.* Average values for daily and monthly calculations are obtained by taking the sum of all daily values divided by the number of all daily values measured during the specified period. In calculating the monthly average, when there is more than one value for a given

day, all the values for that day shall be averaged and the average value used as the daily value for that day.

13. Section F. of Part A *Reports to be Filed with the Regional Board* shall be modified as shown in sections C, D, E and F below.

C. Monthly Self-Monitoring Report (SMR).

For each calendar month, a self-monitoring report (SMR) shall be submitted to the Regional Board in accordance with the requirements listed below. The purpose of the report is to document treatment performance, effluent quality and compliance with waste discharge requirements prescribed by this Order, as demonstrated by the monitoring program data and the discharger's operation practices. The report shall be submitted to the Regional Board no later than **thirty (30) days after the end of the reporting month.**

1. Letter of Transmittal

Each report shall be submitted with a letter of transmittal. This letter shall include the following:

a. Identification of all violations of effluent limits or other discharge requirements found during the monitoring period;

b. Details of the violations: parameters, magnitude, test results, frequency, and dates;

i. The cause of the violations;

ii. Discussion of corrective actions taken or planned to resolve violations and prevent recurrence, and dates or time schedule of action implementation. If previous reports have been submitted that address corrective actions, reference to such reports is satisfactory.

c. The letter of transmittal shall be signed by the discharger's principal executive officer or ranking elected official, or duly authorized representative, and shall include the following certification statement:

" I certify under penalty of law that this document and all attachments have been prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. The information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

2. Compliance Evaluation Summary

Each report shall include a compliance evaluation summary. This summary shall include, for each parameter for which effluent limits are specified in the Permit, the number of samples taken during the monitoring period, and the number of samples in violation of applicable effluent limits.

3. Effluent Data Summary - U.S. EPA NPDES Discharge Monitoring Reports.

Summary tabulations of monitoring data including maximum, minimum and average values for subject monitoring period shall be reported in accordance with the format given by the U.S. EPA

NPDES Discharge Monitoring Report(s) (DMRs; US EPA Form 3320-1 or successor). Copies of these DMRs shall be provided to U.S. EPA as required by U.S. EPA.

4. Results of Analyses and Observations.

   a. Tabulations of all required analyses and observations, including parameter, sample date and time, sample station, and test result.

   b. If any parameter specified in Table 1 of Part B is monitored more frequently than required by this permit and SMP, the results of this additional monitoring shall be included in the monitoring report, and the data shall be included in data calculations and compliance evaluations for the monitoring period.

   c. Calculations for all effluent limits that require averaging of measurements shall utilize an arithmetic mean, unless specified otherwise in this permit or SMP.

5. Data Reporting for Results Not Yet Available.

   The discharger shall make all reasonable efforts to obtain analytical data for required parameter sampling in a timely manner. The Regional Board recognizes that certain analyses require additional time in order to complete analytical processes and result reporting. For cases where required monitoring parameters require additional time to complete analytical processes and reporting, and results are not available in time to be included in the SMR for the subject monitoring period, such cases shall be described in the SMR. Data for these parameters, and relevant discussions of any observed violations, shall be included in the next SMR submitted after results are available.

6. Reporting Data in Electronic Format.

   The discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. The discharger is currently submitting SMRs electronically in a format approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS). The ERS format includes, but is not limited to, a transmittal letter, summary of violation details and corrective actions, and transmittal receipt.

D. Self-Monitoring Program Annual Report (Annual Report).

An Annual Report shall be submitted for each calendar year. The report shall be submitted to the Regional Board **by February 15 of the following year**. This report shall include the following:

- Both tabular and graphical summaries of monitoring data collected during the calendar year that characterizes treatment plant performance and compliance with waste discharge requirements.

- A comprehensive discussion of treatment plant performance and compliance with waste discharge requirements. This discussion should include any corrective actions taken or planned such as changes to facility equipment or operation practices which may be needed to achieve compliance, and any other actions taken or planned that are intended to improve performance and reliability of the discharger's wastewater collection, treatment or disposal practices.

- A plan view drawing or map showing the dischargers' facility, flow routing and sampling and observation station locations.

E. Spill Reports.

A report shall be made of any spill of oil or other hazardous material.

The spill shall be reported by telephone as soon as possible and no later than 24 hours following occurrence or discharger's knowledge of occurrence. Spills shall be reported by telephone as follows:

During weekdays, during office hours of 8 am to 5 pm, to Ray Balcom at the Regional Board:

Current telephone number: (510) 622 – 2312, (510) 622-2460 (FAX).

During non-office hours, to the State Office of Emergency Services:

Current telephone number: (800) 852 - 7550.

A written report shall be submitted to the Regional Board within five (5) working days following telephone notification, unless directed otherwise by Board staff. A report submitted by facsimile transmission is acceptable for this reporting. The written report shall include the following:

Date and time of spill, and duration if known.

Location of spill (street address or description of location).

Nature of material spilled.

Quantity of material involved.

Receiving water body affected.

Cause of spill.

Observed impacts to receiving waters (e.g., discoloration, oil sheen, fishkill).

Corrective actions that were taken to contain, minimize or cleanup the spill.

Future corrective actions planned to be taken in order to prevent recurrence, and time schedule of implementation.

Persons or agencies contacted.

F. Reports of Collection System Overflows.

Dry weather overflows of sewage from the discharger's collection system, other than overflows specifically addressed elsewhere in this Order and SMP, shall be reported to the Regional Board in accordance with the following:

1. *Overflows in excess of 1,000 gallons.*

a. Overflows in excess of 1,000 gallons shall be reported by telephone and written report, as follows:

b. Overflows shall be reported by telephone as soon as possible and no later than 24 hours following occurrence or discharger's knowledge of occurrence. Notification shall be made as follows:

c. Notify the current Board staff inspector, or case handler, by phone call or message, or by facsimile:

- [current staff inspector, Ray Balcom, phone number (510) 622 –2312]
- [current staff case handler, phone number (510) 622 – 2300]
- [current Regional Board Fax number: (510) 622 – 2460];

d. Notify the State Office of Emergency Services at phone number: (800) 852 - 7550.

e. Submit a written report of the incident in follow-up to telephone notification. The written report shall be submitted along with the regular self-monitoring report for the reporting period of the incident, unless directed otherwise by Board staff, and shall include the following:

- Estimated date and time of overflow start and end.
- Location of overflow (street address or description of location).
- Estimated volume of overflow.
- Final disposition of overflowed wastewater (to land, storm drain, surface water body).
- Include the name of any receiving water body affected.
- Cause of overflow.
- Observed impacts to receiving waters if any (e.g., discoloration, fish kill).
- Corrective actions that were taken to contain, minimize or cleanup the overflow.
- Future corrective actions planned to be taken to prevent recurrence and time schedule of implementation.
- Persons or agencies contacted.

2. Overflows less than 1,000 gallons.

Overflows less than 1,000 gallons shall be reported by written report, as follows:

a. The discharger shall prepare and retain records of such overflows, with records available for review by Board staff upon request.

b. The records for these overflows shall include the information as listed in 1.e. above.

c. A summary of these overflows shall be submitted to the Regional Board annually, as part of the Discharger's Self-Monitoring Program Annual Report.

G. Reports of Treatment Plant Process Bypass or Significant Non-Compliance.

The following requirements apply to all treatment plant bypasses and significant non-compliance occurrences, except for bypasses under the conditions contained in 40 CFR Part 122.41 (m)(4) as stated in Standard Provision A.13:

1. A report shall be made of any incident, other than wet weather discharges or bypasses addressed elsewhere in this permit and self-monitoring program, where the discharger:

   a. experiences or intends to experience a bypass of any treatment process, or

   b. experiences violation or threatened violation of any daily maximum effluent limit contained in this Permit or other incident of significant non-compliance, due to:

      i. maintenance work, power failures or breakdown of waste treatment equipment, or

      ii. accidents caused by human error or negligence, or

      iii. other causes such as acts of nature.

2. Such incidents shall be reported to the Regional Board in accordance with the following:

   a. Notify Regional Board staff by telephone:

      i. within 24 hours of the time the discharger becomes aware of the incident, for incidents that have occurred, and

      ii. as soon as possible in advance of incidents that have not yet occurred.

   b. Submit a written report of the incident in follow-up to telephone notification.

   c. The written report shall be submitted along with regular self-monitoring report for the reporting period of the incident, unless directed otherwise by Board staff.

   d. The written report for a treatment process bypass shall include the following:

      i. Identification of treatment process bypassed;

      ii. Date and time of bypass start and end;

      iii. Total duration time;

      iv. Estimated total volume;

      v. Description of, or reference to other report(s) describing, bypass event, cause, corrective actions taken, and any additional monitoring conducted.

   e. The written report for violations of daily maximum effluent limits or similar significant non-compliance shall include information as described in section IV.C.1.b. of this SMP.

3. During any treatment process bypass, the discharger shall conduct additional monitoring as described in Section V of this SMP. The results of such monitoring shall be included in the regular SMR for the reporting period of the bypass.

V. Recording Requirements - Records To Be Maintained

Written or electronic source data pertinent to demonstrating compliance with waste discharge requirements including self-monitoring program requirements, shall be maintained by the discharger in a manner and at a location (e.g., wastewater treatment plant or discharger offices) such that the records are accessible to Board staff. These records shall be retained by the discharger for a minimum of three years. The minimum period of retention shall be extended during the course of any unresolved litigation regarding the subject discharges, or when requested by the Regional Board or by the Regional Administrator of the US EPA, Region IX.

Records to be maintained shall include the following:

A. Parameter Sampling and Analyses, and Observations.

For each sample, analysis or observation conducted, records shall include the following:

1. Parameter
2. Identity of sampling or observation station, consistent with the station descriptions given in this SMP.
3. Date and time of sampling or observation.
4. Method of sampling (grab, composite, other method).
5. Date and time analysis started and completed, and name of personnel or contract laboratory performing the analysis.
6. Reference or description of procedure(s) used for sample preservation and handling, and analytical method(s) used.
7. Calculations of results.
8. Analytical method detection limits and related quantitation parameters.
9. Results of analyses or observations.

B. Flow Monitoring Data.

For all required flow monitoring (e.g., influent and effluent flows), records shall include the following:

1. Total flow or volume, for each day.
2. Maximum, minimum and average daily flows for each calendar month.

C. Wastewater Treatment Process Solids.

1. For each treatment process unit which involves solid removal from the wastewater stream, records shall include the following:

   a. Total volume and/or mass quantification of solids removed from each unit (e.g., grit, skimmings, undigested sludge), for each calendar month; and

   b. Final disposition of such solids (e.g., landfill, other subsequent treatment unit).

2. For final dewatered sludge from the treatment plant, records shall include the following:

   a. Total volume and/or mass quantification of dewatered sludge, for each calendar month;

   b. Solids content of the dewatered sludge; and

   c. Final disposition of dewatered sludge (point of disposal location and disposal method).

D. Disinfection Process.

For the disinfection process, records shall be maintained documenting process operation and performance, including the following:

1. For bacteriological analyses:

   a. Date and time of each sample collected;

   b. Wastewater flow rate at the time of sample collection;

   c. Results of sample analyses (coliform count);

   d. Required statistical parameters of cumulative coliform values (e.g., moving median or log mean for number of samples or sampling period identified in waste discharge requirements).

2. For chlorination process, at least daily average values for the following:

   a. Chlorine residual in contact basin (mg/L);

   b. Contact time (minutes);

   c. Chlorine dosage (kg/day);

   d. Dechlorination chemical dosage (kg/day)

E. Treatment Process Bypasses.

A chronological log of all treatment process bypasses, other than wet weather bypasses addressed elsewhere in this permit and self-monitoring program, including the following:

1. Identification of treatment process bypassed;

2. Date and time of bypass start and end;

3. Total duration time;

4. Estimated total volume;

5. Description of, or reference to other report(s) describing, bypass event, cause, corrective actions taken, and any additional monitoring conducted.

F. Collection System Overflows

A chronological log of all collection system overflows, including the following:

1. Location of overflow;

2. Date and time of overflow start and end;

3. Total duration time;

4. Estimated total volume;

5. Description of, or reference to other report(s) describing, overflow event, cause, corrective actions taken, and any additional monitoring conducted.

VI. Selected Constituents Monitoring

A. Effluent monitoring shall include evaluation for all constituents listed in Table 1 by sampling and analysis of final effluent.

B. Analyses shall be conducted using the lowest commercially available and reasonably achievable detection levels. The objective is to provide quantification of constituents sufficient to allow evaluation of observed concentrations with respect to respective water quality objectives.

VII. Monitoring Methods And Minimum Detection Levels

A. The Discharger may use the methods listed in Table 2 or alternate test procedures that have been approved by the U.S. EPA Regional Administrator pursuant to 40 CFR 136.4 and 40 CFR 136.5 (revised as of May 14, 1999); or

B. Where no methods are specified for a given pollutant in Table 2 below, methods approved by the SWRCB or RWQCB.

VIII. Self-Monitoring Program Certification

I, Loretta K. Barsamian, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Board Order No. R2-2002-0073.

2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the Discharger, and revisions will be ordered by the Executive Officer.

3. Is effective as of **July 1, 2002**

LORETTA K. BARSAMIAN
Executive Officer

Attachment A: Chronic Toxicity – Definition of Terms and Screening Phase Requirements

Figure 1: Shoreline Sampling Stations

ATTACHMENT A
CHRONIC TOXICITY
DEFINITION OF TERMS & SCREENING PHASE REQUIREMENTS

I. Definition of Terms

A. No observed effect level (NOEL) for compliance determination is equal to IC_{25} or EC_{25}. If the IC_{25} or EC_{25} cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.

B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC_{25} is the concentration of toxicant (in percent effluent) that causes a response in 25% of the test organisms.

C. Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal, non-quantal biological measurement, such as growth. For example, an IC_{25} is the estimated concentration of toxicant that would cause a 25% reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as EPA's Bootstrap Procedure.

D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

II. Chronic Toxicity Screening Phase Requirements

A. The discharger shall perform screening phase monitoring:
   1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to pretreatment, source control, and waste minimization efforts, or
   2. Prior to Permit reissuance. Screening phase monitoring data shall be included in the NPDES Permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.

B. Design of the screening phase shall, at a minimum, consist of the following elements:
   1. Use of test species specified in Tables 1 and 2 (attached), and use of the protocols referenced in those tables, or as approved by the Executive Officer;
   2. Two stages:
      a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Table 3 (attached); and
      b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.
   3. Appropriate controls; and
   4. Concurrent reference toxicant tests.

C. The discharger shall submit a screening phase proposal to the Executive Officer for approval. The proposal shall address each of the elements listed above.

TABLE C 1
CRITICAL LIFE STAGE TOXICITY TESTS FOR ESTUARINE WATERS

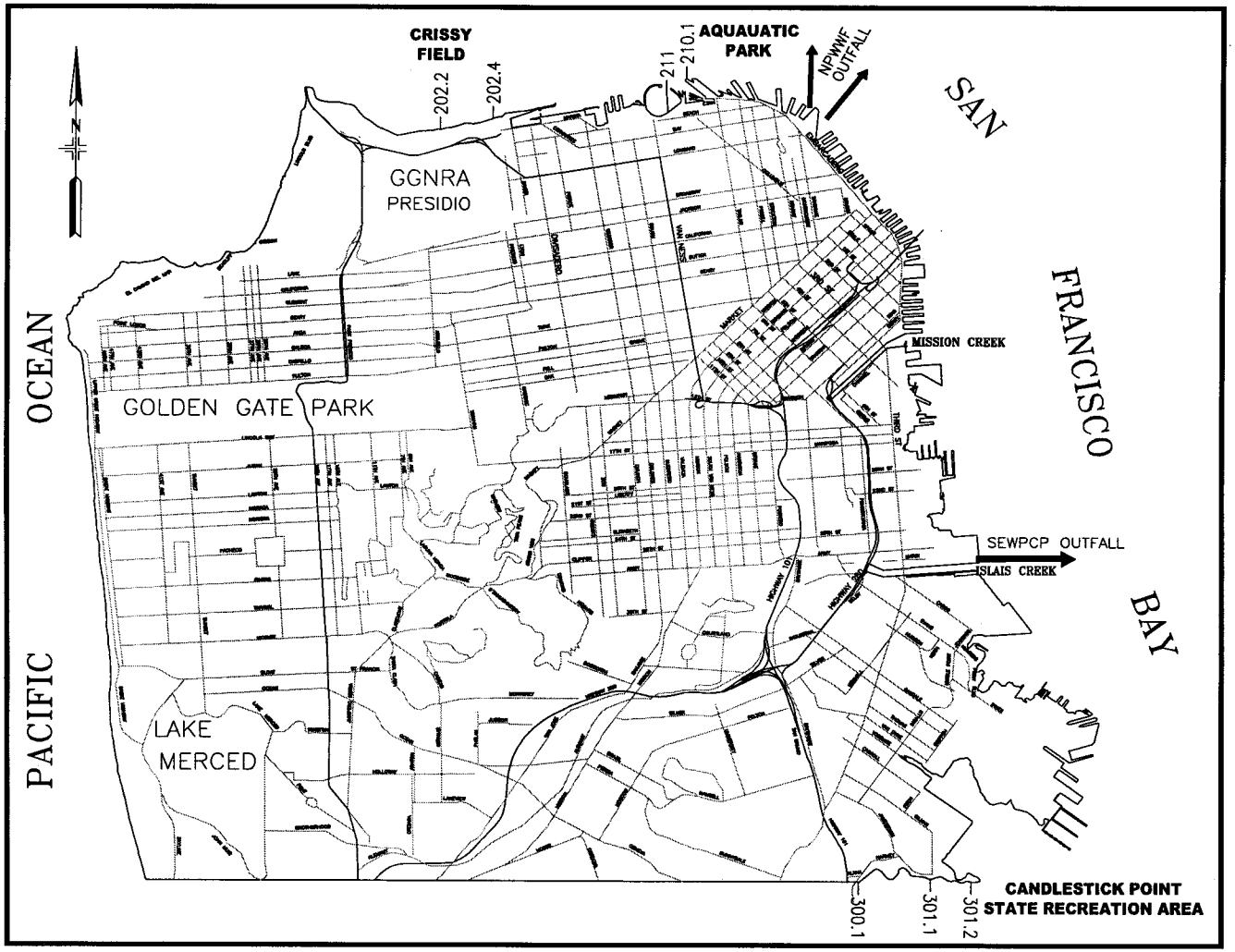
SPECIES (Scientific Name)	EFFECT	TEST DURATION	REFERENCE
Alga (Skeletonema costatum) (Thalassiosira pseudonana)	growth rate	4 days	1
Red alga (Champia parvula)	number of cystocarps	7-9 days	3
Giant kelp (Macrocystis pyrifera)	percent germination; germ tube length	48 hours	2
Abalone (Haliotis rufescens)	abnormal shell development	48 hours	2
Oyster (Crassostrea gigas)	abnormal shell development; percent survival	48 hours	2
Mussel (Mytilus edulis)	abnormal shell development; percent survival	48 hours	2
Echinoderms (Urchins: Strongylocentrotus purpuratus) (Sand dollar: Dendraster excentricus)	percent fertilization	1 hour	2
Shrimp (Mysidopsis bahia)	percent survival; growth	7 days	3
Shrimp (Holmesimysis costata)	percent survival; growth	7 days	2
Top smelt (Atherinops affinis)	percent survival; growth	7 days	2
Silversides (Menidia beryllina)	larval growth rate; percent survival	7 days	3

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for conducting static 96-hour toxicity tests with microalgae. Procedure E 1218-90. ASTM Philadelphia, PA.

2. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995

3. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-90/003. July 1994

Figure 1: Shoreline Sampling Stations



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN FRANCISCO BAY REGION

1515 CLAY STREET, SUITE 1400

OAKLAND, CA 94612

(510) 622 – 2300 Fax: (510) 622 - 2460

FACT SHEET

for

NPDES PERMIT and WASTE DISCHARGE REQUIREMENTS for

CITY AND COUNTY OF SAN FRANCISCO

SOUTHEAST WATER POLLUTION CONTROL PLANT,

NORTH POINT WET WEATHER FACILITY, AND

BAYSIDE WET WEATHER FACILITIES

SAN FRANCISCO, SAN FRANCISCO COUNTY

NPDES Permit No. CA0037664

Adopted June 19, 2002

TABLE OF CONTENTS

ATTACHED TABLES

I. PUBLIC NOTICE:

1. Written Comments

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments should be submitted to the Regional Board no later than 5:00 p.m. on May 31, 2002.

2. Public Hearing

- The draft permit will be considered for adoption by the Regional Board at a public hearing during the Regional Board's regular monthly meeting at: Elihu Harris State Office Building, 1515 Clay Street, Oakland, CA; 1st floor Auditorium.
- This meeting will be held on: June 19, 2002, starting at 9:00 am.

3. Additional Information

- For additional information about this matter, interested persons should contact Regional Board staff member: Ms. Judy C. Huang, Phone: (510) 622-2363; email: jch@rb2.swrcb.ca.gov

This Fact Sheet contains information regarding an application for waste discharge requirements and National Pollutant Discharge Elimination System (NPDES) permit for the City and County of San Francisco for discharges from the City's Southeast Water Pollution Control Plant, North Point Wet Weather Facility, and Bayside Wet Weather Facilities. The Fact Sheet describes the factual, legal, and methodological basis for the proposed permit and provides supporting documentation to explain the rationale and assumptions used in deriving the limits.

II. INTRODUCTION

The City and County of San Francisco, hereinafter called the discharger, has applied to the Board for reissuance of waste discharge requirements and permits to discharge treated wastewater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES) for Southeast Water Pollution Control Plant (NPDES Permit No. CA 0037664) and for Bayside Wet Weather Facilities including the North Point Wet Weather Facility (NPDES Permit No. CA 0038610). Since the permits CA0037664 and CA 0038610 regulate two different components of the same Bayside Wastewater treatment system, this permit will combine the two NPDES permits.

Combined Sewer. The discharger collects wastewater in a combined sewer system. This means the domestic sewage, industrial wastewater, and stormwater runoff are collected in the same pipes (combined sewer). Most other communities in California have a separated sewer system: one set of pipes for domestic sewage and industrial waste and another set for stormwater. The City has complied with federally mandated upgrades to secondary level treatment of its dry weather wastewater treatment plants to comply with the Clean Water Act as required of Publicly Owned Treatment Works (POTW). The combined sewer system facilities are not subject to the secondary treatment regulations of 40 Code of Federal Regulation (CFR) Section 133. The U.S. EPA's Office of General Counsel has classified facilities that treat combined sewer overflows as point sources subject to Section 301(b)(1)(A) of the Clean Water Act. Under wet weather conditions, the City's combined sewer system is regulated under the Federal Combined Sewer Overflow Control Policy,

(59FR 18688). Combined sewer system wet weather facilities must provide storage capacity for wet weather flows, maximize flow to treatment facilities, and minimize combined sewer overflows.

III. Facilities Description

1. ***Facility Location and Description***

   a. The Southeast Water Pollution Control Plant is located at 750 Phelps Street in San Francisco. It is a secondary wastewater treatment plant with a peak secondary treatment capacity of 150 million gallons per day (mgd). During wet weather, the Southeast wet weather facilities are engaged to provide primary treatment to an additional 100 mgd of mixed stormwater and sewage.

   b. The North Point Wet Weather Facility is located at 111 Bay Street in San Francisco. It operates only during wet weather and provides primary level treatment to combined stormwater and wastewater with a peak primary treatment capacity of 150 mgd. It is not a publicly owned treatment works (POTW) as defined in 40 Code of Federal Regulations (CFR) 122.2.

   c. Bayside Wet Weather Storage/Transport and Diversion Structures consist of a series of interconnected large underground rectangular tanks or tunnels that ring San Francisco like a moat, and 29 overflow structures. These storage/transport structures provide storage and treatment equivalent to primary treatment for additional stormwater and wastewater during wet weather conditions. When capacities at the wastewater treatment plants, wet weather facilities and storage/transport structures are exceeded, the excess flow is discharged into the Bay via the 29 shoreline overflow structures. In the event discharges from the Combined Sewer Overflow structures are necessary, these Storage/Transport facilities also provide treatment equivalent to primary treatment.

   d. The locations of the above facilities are listed in the table below and shown in Attachments A and B of the permit.

2. ***Collection System, Wastewater Treatment, and Discharge System Descriptions***

   a. Wet Weather Day:

      i. Definition: Wet weather day is defined as any day in which one of the following conditions exists as a result of rain fall:

         1. Instantaneous influent flow to the Southeast water Pollution Control Plant exceeds 110 mgd; or

         2. The average influent flow concentration of TSS or BOD is less than 100 mg/L, or

         3. North Shore storage/transport wastewater elevation exceeds 100 inches.

      Condition #1 above was established based on the maximum pumping capacity of San Francisco Southeast WPCP's deep water outfall booster pump station. Condition #2 above was established based on the minim allowable influent concentration of TSS

and BOD that Southeast WPCP can reliably achieve 85% removal. Condition #3 was established based on the maximum pumping capacity from the North Shore storage/transport to Southeast WPCP.

ii. During wet weather, combined stormwater and wastewater flows are treated at the Southeast Water Pollution Control Plant, the North Point Wet Weather Facility and the Bayside Wet Weather Storage/Transport and Diversion Structures as described below under ***Discharge Process*** (Section IV.2).

b. Dry Weather:

i. Definition: any day in the year, that is not defined as wet weather days.

ii. During dry weather, all the wastewater collected is treated at the Southeast Waste Water Treatment Plant.

c. The discharger treats domestic and industrial wastewater from the Southeast and North Shore areas of San Francisco, the Bayshore Sanitary District, City of Brisbane and a small part of the North San Mateo County Sanitation District.

3. The discharger presently discharges an average dry weather flow of 68 mgd from the Southeast Water Pollution Control Plant. Wet weather flow is maximized at the Southeast Water Pollution Control Plant at 250 mgd and at 150 mgd from the North Point Wet Weather Facility.

4. ***Discharge Locations***. The discharge locations are as follows:

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste 001 **Discharge E-001** Southeast Water Pollution Control Plant (Pier 80 Outfall)	810 feet from shore/ 42 feet below mean lower low water	Lower San Francisco Bay	37° 44' 58"	122° 22' 22"
Waste 002 **Discharge E-002** Southeast Water Pollution Control Plant (Quint Street Outfall)	Shoreline Outfall	Islais Creek	37° 44' 50"	122° 23' 13"

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste 003 **Discharges E-003-006** North Point Wet Weather Facility (Discharges 003 and 004, at Pier 33 and Discharges 005 and 006, at Pier 35)	Dual outfall both 800 feet from shore / 18 feet below mean lower low water	Central San Francisco Bay	37° 48' 25" & 37° 48' 36"	122° 24' 11" & 22° 24' 20"
Waste 007 **Discharge E-007** Oceanside Water Pollution Control Plant (Southwest Ocean Outfall)	This discharge is not regulated by this permit and is only incorporated for reference. It is regulated in permit number CA00376981 City and County of San Francisco Oceanside Water Pollution Control Plant and Westside Wet Weather Combined Sewer System.			
Combined Sewer Overflow Sites				
Waste CSO 001 **Discharge CSW-001**	These discharges are not regulated by this permit and are only incorporated for reference. They are regulated in permit number CA0037681 City and County of San Francisco Oceanside Water Pollution Control Plant and the Westside Wet Weather Combined Sewer System.			
Waste CSO 002 **Discharge CSW-002**				
Waste CSO 003 **Discharge CSW-003**				
Waste CSO 004 **Discharge CSW-004**				
Waste CSO 005 **Discharge CSW-005**				
Waste CSO 006 **Discharge CSW-006**				
Waste CSO 007 **Discharge CSW-007**				
Waste CSO 008	Discharge Eliminated			
Waste CSO 009 **Discharge CSN-009** Baker Street	Shoreline Outfall	Marina Beach North Shore Drainage Basin	37° 48' 29"	122° 26' 48"
Waste CSO 010 **Discharge CSN-010** Pierce Street	Shoreline Outfall	Marina Beach North Shore Drainage Basin	37° 48' 25"	122° 26' 24"
Waste CSO 011 **Discharge CSN-011** Laguna Street	Shoreline Outfall	Yacht Harbor #2 North Shore Drainage Basin	37° 48' 22"	122° 25' 53"

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste CSO 012	Discharge Eliminated			
Waste CSO 013 **Discharge CSN-013** Beach Street	Shoreline Outfall	Pier 39 North Shore Drainage Basin	37° 48' 30"	122° 24' 24"
Waste CSO 014	Discharge Eliminated			
Waste CSO 015 **Discharge CSN-015:** Sansome Street	Shoreline Outfall	Pier 31 North Shore Drainage Basin	37° 48' 24"	122° 24' 11"
Waste CSO 016	Discharge Eliminated			
Waste CSO 017 **Discharge CSN-017** Jackson Street	Shoreline Outfall	Pier 9 North Shore Drainage Basin	37° 47 54"	122° 23' 41"
Waste CSO 018 **Discharge CSC-018** Howard Street	Shoreline Outfall	Pier 14 Central Drainage Basin	37° 47' 35"	122° 23' 24"
Waste CSO 019 **Discharge CSC-019** Brannan Street	Shoreline Outfall	Pier 32 Central Drainage Basin	37° 47' 7"	122° 23' 24"
Wastes CSO 020 & CSO 021	Discharges Eliminated			
Waste CSO 022 **Discharge CSC-022** Third Street	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 38"	122° 23' 22"
Waste CSO 023 **Discharge CSC-023** Fourth Street North	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 32"	122° 23' 29"
Waste CSO 024 **Discharge CSC-024** Fifth Street North	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 26"	122° 23' 38"

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste CSO 025 **Discharge CSC-025** Sixth Street North	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 19"	122° 23' 46"
Waste CSO 026 **Discharge CSC-026** Division Street	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 13"	122° 23' 51"
Waste CSO 027 **Discharge CSC-027** Sixth Street South	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 17"	122° 23' 42"
Waste CSO 028 **Discharge CSC-028** Fourth Street South	Shoreline Outfall	Mission Creek Central Drainage Basin	37° 46' 30"	122° 23' 28"
Waste CSO 029 **Discharge CSC-029** Mariposa Street	Shoreline Outfall	Central Basin Central Drainage Basin	37° 45' 53"	122° 23' 7"
Waste CSO 030 **Discharge CSC-030** 20th Street	Shoreline Outfall	Central Basin Central Drainage Basin	37° 45' 40"	122° 22' 48"
Waste CSO 030A **Discharge CSC-030A** 22nd Street	Shoreline Outfall	Central Basin Central Drainage Basin	37° 45' 28"	122° 22' 49"
Waste CSO 031 **Discharge CSC-031** Third Street North	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 52"	122° 23' 10"
Waste CSO 031A **Discharge CSC-031A** Islais Creek North	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 52"	122° 23' 15"
Waste CSO 032 **Discharge CSC-032** Marin Street	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 55"	122° 23' 27"

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste CSO 033 **Discharge CSC-033** Selby Street	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 52"	122° 23' 27"
Waste CSO 034	Discharge Eliminated			
Waste CSO 035 **Discharge CSC-035** Third Street South	Shoreline Outfall	Islais Creek Central Drainage Basin	37° 44' 50"	122° 23' 10"
Waste 036	Discharge Eliminated			
Waste CSO 037 **Discharge CSS-037** Evans Avenue	Shoreline Outfall	India Basin Southeast Drainage Basin	37° 44' 9"	122° 22' 26"
Waste CSO 038 **Discharge CSS-038** Hudson Avenue	Shoreline Outfall	India Basin Southeast Drainage Basin	37° 44' 0"	122° 22' 26"
Waste CSO 039	Discharge Eliminated			
Waste CSO 040 **Discharge CSS-040** Griffith Street South	Shoreline Outfall	Yosemite Canal Southeast Drainage Basin	37° 43' 23"	122° 22' 56"
Waste CSO 041 **Discharge CSS-041** Yosemite Avenue	Shoreline Outfall	Yosemite Canal Southeast Drainage Basin	37° 43' 26"	122° 23' 8"
Waste CSO 042 **Discharge CSS-042** Fitch Street	Shoreline Outfall	South Basin Southeast Drainage Basin	37° 43' 20"	122° 22' 55"

Outfall	Distance from shore/ Depth (Feet)	Receiving Water	Latitude	Longitude
Waste CSO 043 **Discharge CSS-043** Sunnydale Avenue	Shoreline Outfall	Candlestick Cove Southeast Drainage Basin	37° 44' 50"	122° 23' 13"

CSN = North Drainage Basin
CSC = Central Drainage Basin
CSS = Southeast Drainage Basin
CSW = Westside Drainage Basin

5. The Discharge was previously regulated by Waste Discharge Requirements in Order Nos. 94-149, 95-039, and 96-116, adopted by the Board on October 19, 1994, February 15, 1995, and August 21, 1996, respectively. In addition, the SWRCB adopted Order No. WQ 95-04 in September 1995, which remanded portions of Order No. 94-149 based on an appeal of Order 94-149 by the Discharger. In particular, WQ 95-04 effectively removed effluent limitations for aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene, mercury, PAHs, PCBs (Total), TCDD equivalents, toxaphene, and tributyltin which were not supported by the Fact Sheet and findings.

6. The U.S. Environmental Protection Agency (U.S. EPA) and the Board have classified the discharges from Southeast Water Pollution Control Plant, North Point Wet Weather Facility, and Bayside Wet Weather Facilities as a major discharges.

IV. Treatment Process Description

1. ***Treatment Process.***

   a. **Southeast Water Pollution Control Plant:** The treatment process consists of a headworks with coarse and fine bar screens, primary sedimentation tanks, pure oxygen aeration basins, secondary clarifiers and chlorine contact basins. The treatment process schematic diagrams for the Southeast Water Pollution Control Plant are included as Attachment B of this Order.

   b. **North Point Wet Weather Facility:** The treatment process consists of primary sedimentation, clarification, disinfection and dechlorination. It treats exclusively wet weather flow consisting of a combination of domestic and industrial wastewater mixed with stormwater runoff. The treatment level at this wet weather facility is equivalent to the minimum treatment specified by the *Combined Sewer Overflow Control Policy* (59 FR 18688) for the "Presumption" approach as defined in Finding 33.

   c. **Bayside Wet Weather Storage/Transport and Diversion Structures:** The treatment process consists of a series of baffles and weirs that are designed to remove settleable solids and floatables. The treatment is equivalent to the minimum treatment specified by the *Combined Sewer Overflow Control Policy* for the "Presumption" approach.

2. ***Discharge Process.***

a. **Southeast Water Pollution Control Plant:** The Southeast Water Pollution Control Plant has the capacity to treat up to 250 mgd of combined stormwater and wastewater during wet weather conditions. Up to 150 mgd receive secondary treatment; the remaining 100 mgd receive primary treatment. The entire volume of treated stormwater and wastewater is disinfected prior to discharge. During dry weather, all flow is pumped to a deep-water outfall located at Pier 80 (E-001). The flow then discharges through an effluent diffuser located 810 feet offshore of Pier 80. The submerged diffuser is 42 feet below mean lower low water where initial dilution exceeds 10:1. At full wet weather capacity, the discharge via the Southeast Water Pollution Control Plant deep water outfall (E-001) is maximized to 110 mgd of a blended primary and secondary treated effluent. The remaining 140 mgd receive full secondary treatment and are discharged via the Quint St. shallow water outfall into Islais Creek (E-002).

b. **North Point Wet Weather Facility:** The North Point Wet Weather Facility is operational only during wet weather and provides primary treatment to combined stormwater and wastewater flow up to 150 mgd. Treated combined stormwater and wastewater (Waste E-003) is simultaneously discharged from the North Point Wet Weather Facility into San Francisco Bay through four forty-eight inch diameter deep water outfalls which terminate 800 feet offshore, two at the end of Pier 33 (E-003 & E-004) and two at the end of Pier 35 (E-005 & E-006). The entire volume of treated stormwater and wastewater is disinfected and dechlorinated prior to discharge. The outfalls are submerged at a depth of 17-26 feet below mean lower low water.

c. **Bayside Wet Weather Storage/Transport and Diversion Structures:**

   i. The storage/transport structures operate to transport combined sewage and street runoff to the Southeast Water Pollution Control Plant during dry weather periods. During wet weather, these structures provide storage for additional stormwater and wastewater flow, while pumping facilities continue to transfer flow to the treatment facilities. In the event that the capacities of the treatment plant, wet weather facilities and storage structures are exceeded, the combined stormwater and wastewater receive equivalent of primary treatment in the transport structures and are discharged into San Francisco Bay via one of twenty-nine shoreline Combined Sewer Overflow structures (CSO 009 to CSO 043).

   ii. Discharges from these structures occur only when the storm flow exceeds the combined storage capacity of the storage/transports and the capacity of the pumping facilities to transfer flows to the Southeast Water Pollution Control Plant and the North Point Wet Weather Facility. The design of the structures provides for the removal of settleable solids and floatable materials. The outfalls associated with these structures range in size from 18' diameter pipes to quadruple 8'3" x 9'6" box culverts.

3. ***Solids Treatment, Handling and Disposal.***

a. **Southeast Water Pollution Control Plant:** Primary and secondary sludge is processed via anaerobic digestion. Prior to digestion, the secondary sludge is thickened. The digested and dewatered sludge is applied to land as daily cover at permitted sites, or is beneficially re-used at the landfill.

b. **North Point Wet Weather Facility:** Primary sludge is directed to Southeast Water Pollution Control Plant for treatment.

c. **Bayside Wet Weather Storage/Transport and Diversion Structures:** All solids which settle out in the storage/transport are flushed to Southeast Water Pollution Control Plant after the rainstorm subsides.

Combined Sewer Overflow

4. An opinion by the U.S. EPA's Office of General Counsel has classified facilities that treat combined sewer overflows as point sources subject to Section 301(b)(1)(A) of the Clean Water Act. Thus, they are not Publicly Owned Treatment Works (POTWs) subject to the secondary treatment regulations of 40 Code of Federal Regulations (CFR) Section 133. This opinion is supported by subsequent case law (646 F.2d 568(1980); Montgomery Environmental Coalition V. Costle).

5. Wet weather flows are intermittent in nature and subject to a high degree of variability throughout the wet weather season. Based on past rainfall records, the North Point Wet Weather Facility will be operated approximately 30 times per wet season, with the duration of each operation expected to average approximately 14 hours at a maximum flow rate of approximately 150 mgd. The sanitary fraction in controlled overflows averages 6% of the total flow.

6. In 1971 and 1974, San Francisco developed the "Master Plan for Wastewater Management" and "Master Plan Environmental Impact Statement and Report", respectively. These documents set the groundwork for San Francisco's wastewater control program by identifying the need for upgraded treatment levels and the principle of storing accumulated combined sewage flow during wet weather for later treatment at the wastewater treatment plants.

7. In 1979, the Board issued Order No. 79-67 for the wet-weather facilities. This order found that a long term average of 4 overflows per year for diversion structures CSN-009 through CSN-017 (North Shore Drainage Basin), a long term average of 10 overflows per year for diversion structures CSC-018 through CSC-035 (Central Basin Drainage), and a long term average of 1 overflow per year for diversion structures CSS-037 through CSS-043 (Southeast Drainage Basin) would provide adequate overall protection of beneficial uses. This conclusion is based on evidence presented at the public meeting concerning the costs of different types of facilities necessary to achieve specific overflow frequencies, the water quality benefits derived from construction of these facilities, and the effects of the combined sewer overflows to existing beneficial uses. Wet weather flows are governed under compliance with the nine minimum controls contained in the *Combined Sewer Overflow Control Policy* (59FR 18688). The Discharger is responsible for operating wet weather facilities, storage, transport and pumping facilities at maximum efficiency in order to maximize treatment of wet weather flow. The Discharger has successfully designed and completed construction of its wet weather facilities based upon criteria contained in Order No. 79-67. Operation and implementation of these facilities satisfies CSO Control Policy requirements. The system was designed and built based upon historical rainfall data to not exceed the overflow frequencies specified in Order No. 79-67. As specified in Order No. 79-67 and subsequent permits for these facilities, these long term design criteria will not be used to determine compliance or non-compliance. The Board recognizes that some years are wetter than others and may contribute more flow than anticipated in the system design

criteria. The Discharger is required to maximize treatment and shall be considered in compliance as defined by adherence to the Wet Weather Effluent Performance Criteria defined in this permit and the Operations Plan and other permit conditions.

8. The storage and transport and hold structures, which surround the City like a moat, were designed with the capacity to capture wet weather flows for later treatment and prevent shoreline overflows. The system capacity was measured, designed, and constructed based upon a previous 70 year rainfall history pattern of California and the San Francisco Bay Area to capture flows as necessary to achieve the criteria specified in Order No. 79-67. In 1997, the City completed the major components of the Wastewater Master Plan, and is in compliance with the Federal Combined Sewer Overflow Control Policy. Citywide, this construction program cost more than $1.4 billion dollars over a twenty-year period and represents an expenditure of nearly $1,900 for every resident in the City of San Francisco. Approximately $1 billion of the cost represents facilities needed to control wet weather flows. The remaining costs were for treatment upgrades to all facilities and construction of the Oceanside Water Pollution Control Plant. Discharges associated with the Oceanside Water Pollution Control Plant are regulated under NPDES Permit No. CA0038681.

   The Board has determined using BPJ that the nine minimum control technologies represent the appropriate technology based limitations for combine sewer overflows (see BCT/BAT analysis, Attachment A).

Beneficial Uses

The receiving waters for the subject discharges are the waters of Central and Lower San Francisco Bay. Beneficial uses for the Central and Lower San Francisco Bay receiving water, as identified in the Basin Plan and based on known uses of the receiving waters in the vicinity of the discharge, are:

Central San Francisco Bay:
a. Ocean, Commercial, and Sport Fishing
b. Estuarine Habitat
c. Industrial Service Supply
d. Industrial Process Supply
e. Fish Migration
f. Fish Spawning
g. Navigation
h. Preservation of Rare and Endangered Species
i. Water Contact Recreation
j. Noncontact Water Recreation
k. Shellfish Harvesting
l. Wildlife Habitat

Lower San Francisco Bay:
a. Ocean, Commercial, and Sport Fishing
b. Estuarine Habitat
c. Industrial Service Supply
d. Fish Migration
e. Navigation
f. Preservation of Rare and Endangered Species
g. Water Contact Recreation

h. Noncontact Water Recreation
i. Shellfish Harvesting
j. Wildlife Habitat

Receiving Water Salinity

The Basin Plan states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water shall be considered in determining the applicable WQOs. Freshwater objectives apply to discharges to waters both outside the zone of tidal influence and with salinities lower than 5 parts per thousand (ppt) at least 75 percent of the time. Saltwater objectives shall apply to discharges to waters with salinities greater than 5 ppt at least 75 percent of the time. For discharges to waters with salinities in between the two categories or tidally influenced freshwaters that support estuarine beneficial uses, the objectives shall be the lower of the salt or freshwater objectives, based on ambient hardness, for each substance (Basin Plan, pp. 4 – 13). The CTR states that the salinity characteristics (i.e., freshwater vs. saltwater) of the receiving water shall be considered in determining the applicable water quality criteria. Freshwater criteria shall apply to discharges to waters with salinities equal to or less than one ppt at least 95 percent of the time. Saltwater criteria shall apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to water with salinities in between these two categories, or tidally influenced freshwaters that support estuarine beneficial uses, the criteria shall be the lower of the salt or freshwater criteria, (the latter calculated based on ambient hardness), for each substance. The receiving waters for the subject discharge are the waters of Central and Lower San Francisco Bay. Regional Board staff evaluated RMP salinity data from the three nearest receiving water stations, Alameda, Golden Gate and Yerba Buena, for the period February 1996 – August 1999 (see **Table 11, attached)**. During that period, the receiving water's minimum salinity was 12 parts per thousand (ppt) its maximum salinity was 35.9 ppt, and its average salinity was 25.3 ppt. These data are all well above both the Basin Plan and CTR thresholds for salt water; therefore the limits in this Order are based on salt water criteria.

V. DESCRIPTION OF EFFLUENT

Board Order No. 94-149, as amended by Order 96-114 and Order No. 95-039 (collectively the previous permit), presently regulates the discharge from the Southeast Water Pollution Control Plant, North Point Wet Weather Facility, and Bayside Wet Weather Facilities, respectively. The Discharger's dry weather treated wastewater from the Southeast Water Pollution Control Plant has the characteristics summarized in Table A. Table A data represent at least monthly monitoring performed from January 1999 through December 2001 for metals and organic pollutants.

Table A. Summary of Effluent Data for Outfall E-001 (dry weather)

Constituent	Average	Maximum
pH, range min/max (s.u.)	6.25	7.4
BOD_5 (mg/L)	14.5	41
TSS (mg/L)	15.5	53
Arsenic (µg/L)	2.04	5.1
Cadmium (µg/L)	0.26	5.21
Chromium (µg/L)	1.29	9.2
Copper (µg/L)	14.6	33.3
Lead (µg/L)	2.49	14.9

Mercury (µg/L)	0.02	0.169
Nickel (µg/L)	3.94	8.2
Selenium (µg/L)	0.55	1.9
Silver (µg/L)	1.03	3.6
Zinc (µg/L)	61.77	364.87
Cyanide (µg/L)	< 10	< 10
Bis(2-ethylhexyl)Phthalate(µg/L)	3.15	7.9
Total Oil and Grease (mg/L)	6	23
4,4 DDE (µg/L)	< 0.26	< 0.26
Dieldrin (µg/L)	< 0.22	< 0.25

VI. GENERAL RATIONALE

The following documents are the bases for the requirements contained in the proposed Order, and are referred to under the specific rationale section of this Fact Sheet.

- Federal Water Pollution Control Act, as amended (the CWA).
- Code Federal of Regulations, Title 40 - Parts 122-129 (40 CFR Parts 122 - 129) - Protection of Environment, Chapter 1, Environmental Protection Agency, Subchapter D, Water Programs.
- The Regional Board's *Water Quality Control Plan, San Francisco Bay Basin(Region 2)* (the Basin Plan). The Basin Plan defines beneficial uses and contains WQOs for waters of the State within the San Francisco Bay region, including Lower San Francisco Bay. Section 4 of the Basin Plan states that "The Regional Board intends to implement the federal CSO Control Policy for the combined sewer overflows from the City and County of San Francisco". The Regional Board adopted the Basin Plan on June 21, 1995 , State Water Resources Control Board (the State Board) approved it on July 20, 1995 the Office of Administrative Law approved it on November 13, 1995.
- *Combined Sewer Overflow Control Policy* EPA Federal Register 59 FR 18688, April 19, 1994 (hereinafter referred to as the CSO Control Policy)
- California Toxics Rule (the CTR), Federal Register, Vol. 65, No. 97, May 18, 2000.
- National Toxics Rule (the NTR) 57 FR 60848, December 22, 1992, as amended.
- The State Board's *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (the State Implementation Policy, or SIP). The SIP only applies to this discharge during the Dry Weather period.
- The U.S. EPA's 1986 *Quality Criteria for Water, 440/5-86-001*,.
- The U.S. EPA's January 1986 *Ambient Water Quality Criteria for Bacteria – 1986*, 440/5-84-002,
- Combined Sewer Overflows, Guidance For Nine Minimum Controls (Nine Minimum Control, EPA 832-B-95-003, May 1995

- Manual, Combined Sewer Overflow Control, EPA/625/R-93/007, September 1993
- Combined Sewer Overflows, Guidance For Permit Writers, EPA 832-B-95-008, September 1995
- Combined Sewer Overflows, Guidance For Long-Term Control Plan, EPA 832-B-95-002
- Coordinating Combined Sewer Overflow (CSO) Long-Term Planning with Water Quality Standards Reviews (EPA-833-R-01-002)

VII. SPECIFIC RATIONALE

Several specific factors affecting the development of limitations and requirements in the proposed Order are discussed as follows:

1. Recent Plant Performance

Section 402(o) of the CWA and 40 CFR 122.44(l) require that water quality-based effluent limits (WQBELs) in re-issued permits be at least as stringent as in the previous permit. The SIP specifies that interim effluent limitations, if required, must be based on current treatment facility performance. Regional Board staff used best professional judgment (BPJ) to evaluate recent plant performance. Dry Weather effluent monitoring data collected from 1999 to 2001 are considered representative of recent plant performance, based on the following rationale:

- It accounts for flow variation.

- For most of the organic pollutants, 3 years of data were used as this provides an adequate set of effluent data for determining their reasonable potential.

- For mercury, pooled ultra-clean data from more than 20 POTWs from January 2000 to March 2001 were used to allow a valid statistical calculation of an interim concentration limit based on the best available information. For calculation of an interim mass limit, it provides a balanced set of effluent data, which comprise monitoring results measured by both an outdated analytical method and the recent "ultra-clean" method.

2. Impaired Water Bodies in 303(d) List

The U.S. EPA Region 9 office approved the State's 303(d) list of impaired waterbodies on May 12, 1999. The list was prepared in accordance with Section 303(d) of the CWA to identify specific water bodies where it is not expected water quality standards will be met after implementation of technology-based effluent limitations on point sources. The current 303(d) list includes Central and Lower San Francisco Bay as impaired by copper, mercury, nickel, exotic species, total PCBs, dioxin and furan compounds, chlordane, DDT, dieldrin, diazinon, and dioxin-like PCBs.

The SIP requires final effluent limits for all 303(d)-listed pollutants to be based on total maximum daily loads (TMDL) and waste load allocation (WLA) results. The SIP and federal regulations also require that final concentration limits be included for all pollutants demonstrated to have reasonable potential to cause or contribute to an exceedence of water quality objectives (have reasonable potential). The SIP requires permits to establish interim performance-based concentration limits (concentration-based IPBLs), and performance-based mass limits for bioaccumulative pollutants, where the Discharger has demonstrated infeasibility to meet the final WQBELs, together with a

compliance schedule for attainment of the final WQBELs. The SIP also requires the inclusion of appropriate provisions for waste minimization and source control in these cases.

3. Basis for Prohibitions

a) Prohibition A.1 (no discharges other than as described in the permit): This prohibition is based on the Basin Plan, previous permit and BPJ.

b) Prohibition A.2 (10:1 dilution): This prohibition is based on the Basin Plan. The Basin Plan prohibits discharges not receiving 10:1 dilution (Chapter 4, Discharge Prohibition No. 1). The Basin Plan also identifies exceptions that may be granted under certain conditions.

c) Prohibition A.3 (no discharges from wet weather outfalls during dry weather period): This prohibition is based on the Nine Minimum Controls, previous permit, and BPJ.

d) Prohibition A.4 (no bypass): This prohibition is based on the Basin Plan. The Basin Plan prohibits the discharge of partially treated and untreated wastes (Chapter 4, Discharge Prohibition No.15). This prohibition is based on general concepts contained in Sections 13260 through 13264 of the California Water Code that relate to the discharge of waste to State waters without filing for and being issued a permit. Under certain circumstances, as stated in 40 CFR 122.41(m)(4), the facilities may bypass waste streams in order to prevent loss of life, personal injury, or severe property damage, or if there were no feasible alternatives to the bypass and the Discharger submitted notices of the anticipated bypass. This prohibition pertains to dry weather discharges only. Wet weather discharges are regulated under the EPA *Combined Sewer Overflow Control Policy* (59 FR 18688).

e) Prohibition A.5 (no degradation of shellfish harvest during dry weather): This prohibition is based on previous permit and BPJ.

f) Prohibition A.6 (flow limit): This prohibition is based on the reliable treatment capacity of the plant. This provision is based on best professional judgment.

4. Basis for Dry Weather Effluent Limitations

a) Dry Weather Effluent Limitations B.1 (Discharges to Lower San Francisco Bay; listed below):

Permit Limit	Parameter	Units	Monthly Average	Weekly Average	Daily Maximum	Instantaneous Maximum
B.1.a.i.	Biochemical Oxygen Demand (BOD)	mg/L	30	45	--	--
B.1.a.ii.	Total Suspended Solids (TSS)	mg/L	30	45	--	--
B.1.a.iii.	Oil & Grease	mg/L	10	--	20	--
B.1.a.iv.	Settleable Matter	ml/L-hr	0.1	--	0.2	--
B.1.b.	pH	>6.0, <9.0				
B.1.c.	BOD and TSS Removal	%	Monthly average, minimum 85% removal			
B.1.d.	Fecal Coliform	CFU/100 ml	500 30-day median, 1100 90 percentile			
B.1.e.	Total Chlorine Residual[1]	mg/L	--	--	--	0.0

Footnotes to effluent limitations:

1. Requirement defined as below the limit of detection in the latest edition of "Statistical Methods for Examination of Water and Wastewater."

b) Effluent Limitations B.1.a-e limits are technology-based limits representative of and intended to ensure adequate and reliable secondary level wastewater treatment during dry weather. These limits are based on the Basin Plan (Chapter 4, page 4-8, and Table 4-2, at page 4-69). All limits apply independently to the discharges to dry weather discharges to Central and Lower San Francisco Bay.

c) BOD and TSS, 30 mg/L monthly average and 45 mg/L weekly average (Effluent Limitation B.1.a.i. & ii.): These are standard secondary treatment requirements, and existing permit effluent limitations that are based on Basin Plan requirements, derived from federal requirements (40 CFR 133.102). These effluent limitations apply only to dry weather discharges.

d) Oil & Grease, Settleable Matter and Total Chlorine Residual: Standard secondary treatment requirements, and existing permit effluent limitations, based on Basin Plan requirements.

e) Effluent Limitation B.1.b. (pH): The pH limit is based on the Basin Plan (Table 4-2, pg. 4 – 69) and the excursion allowance is based on 40 CFR 133.102, which applies to indirect industrial dischargers. Based on Regional Board staff's best professional judgment, the excursion allowance is extended to the Discharger.

f) Effluent Limitation B.1.c. (BOD and TSS monthly average 85 percent removal): These are standard secondary treatment requirements (Table 4-2, pg. 4 – 69), and existing permit effluent limitations based on Basin Plan requirements, derived from federal requirements (40 CFR 133.102; definition in 133.101). Compliance has been demonstrated by existing plant performance for dry weather flows . During the past 3 years, the Discharger has consistently met these removal efficiency limits.

g) Effluent Limitation B.1.d. (Fecal Coliform): The purpose of this effluent limitation is to ensure adequate disinfection of the discharge in order to protect beneficial uses of the receiving waters. Effluent limits are based on water quality objectives for bacteriological parameters for receiving water beneficial uses. Water quality objectives are given in terms of parameters which serve as surrogates for pathogenic organisms. The traditional parameter in this regard is coliform bacteria, either as total coliform or as fecal coliform. The Basin Plan's Table 4-2 (pg. 4 – 69) and its footnotes allow fecal coliform limitations to be substituted for total coliform limitations provided that the Discharger conclusively demonstrates "through a program approved by the Regional Board that such substitution will not result in unacceptable adverse impacts on the beneficial uses of the receiving waters".

h) Wet Weather Effluent Limitations B.2 (Discharges to Lower San Francisco Bay; listed below):

Permit Limit	Parameter	Units	Monthly Average	Weekly Average	Daily Maximum	Instantaneous Maximum
B.2.a.	Fecal Coliform	CFU/100 ml	500 30-day median,		1100 90 percentile	
B.2.b.	Total Chlorine Residual[1]	mg/L	--	--	--	0.0

Footnotes to effluent limitations:

1. Requirement defined as below the limit of detection in the latest edition of "Statistical Methods for Examination of Water and Wastewater."

Effluent Limitations B.2.a-d limits are performance-based limits representative of and intended to ensure adequate implementation of the Nine Minimum Controls. These limits are based on the previous permit.

i) Effluent Limitation B.3 (Whole Effluent Toxicity) The Basin Plan specifies a narrative objective for toxicity, requiring that all waters shall be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alternations in population, community ecology, or receiving water biota. These effluent toxicity limits are necessary to ensure that this objective is protected. The acute toxicity limit is based on the Basin Plan (Table 4-4, pg. 4 – 70).

j) Effluent Limitation B.4 (Chronic Toxicity): The chronic toxicity limit which applies to dry weather discharges is based on the Basin Plan's narrative toxicity definition on Page 3 – 4, and is consistent with the SIP requirements. The Discharger performed chronic toxicity screening prior to the application of permit renewal. The results of the screening study indicated that echinoderms appeared to be the most sensitive species.

k) Effluent Limitation B.5 (Toxic Substances):

1. Reasonable Potential Analysis (RPA):

a. 40 CFR 122.44(d)(1)(i) specifies that permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard" (have reasonable potential). Thus, the fundamental step in determining whether or not a WQBEL is required is to assess a pollutant's reasonable potential of causing or contributing to an excursion above its applicable water quality objective or criterion. The following section describes the reasonable potential analysis and the results of such an analysis for the pollutants identified in the Basin Plan and the CTR.

i) *WQOs and WQCs*: The RPA involves the comparison of effluent data with appropriate WQOs including narrative toxicity objectives in the Basin Plan and the applicable WQCs in the CTR/NTR (collectively WCOs). The Basin Plan objectives and CTR criteria are shown in **Table 7, attached (WQOs and WQCs)**.

ii) *Methodology*: RPA is conducted using the method and procedures prescribed in Section 1.3 of the SIP. Board staff and the Discharger have analyzed the effluent data to determine if the discharge has reasonable potential. **Table 6, attached (Reasonable Potential Analysis)**, shows the step-wise process described in Section 1.3 of the SIP.

b. *Effluent and background data*: The RPA is based on effluent data collected by the Discharger from January 1999 through December 2001 for metals, mercury, cyanide, and organic pollutant effluent data, as depicted in **Tables 1 through 5, attached (Priority Pollutant Data)**, attached to this Fact Sheet. Water-quality data collected from San Francisco Bay at the Yerba Buena Island and Richardson Bay monitoring stations through the Regional Monitoring Program in 1993-2000 were reviewed to determine the maximum observed background values - see Table 8, attached (Ambient Background).

i. RPA determination: The RPA results are shown in Table B, below (as well as in Table 6 (RPA), attached to this Fact Sheet). Pollutants with reasonable potential were copper, lead, nickel, mercury, silver, zinc, dioxin TEQ, bis(2-ethylhexyl)phthalate, tributyltin, 4,4-DDE, and dieldrin.

TABLE B. Summary of Reasonable Potential Results

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO (ug/L)	Maximum Background (µg/L)	RPA Results[2]
2	Arsenic	5.1	36	2.22	N
4	Cadmium	5.21	9.3	0.13	N
5b	Chromium (VI)	9.2	50	4.4	N
6	**Copper**	**33.3**	**3.7**	**2.45**	**Y**
7	**Lead**	**14.9**	**5.6**	**2.38**	**Y**
8	**Mercury**	**0.169**	**0.025**	**0.0064**	**Y**
9	**Nickel**	**8.2**	**7.1**	**5.9**	**Y**
10	Selenium	1.9	5	0.19	N
11	**Silver**	**3.6**	**2.3**	**0.068**	**Y**
13	**Zinc**	**364.8**	**58**	**13.3**	**Y**
14	Cyanide	<10	1	1.0	N
16	**2,3,7,8-TCDD (Dioxin)**	**<3.17E-06**	**1.4E-08**	**NA**	**Y**
17	Acrolein	<0.2	780	NA	Ub
18	Acrylonitrile	<1.1	0.66	NA	Ub,Ud
19	Benzene	<0.5	71	NA	Ub
20	Bromoform	<0.7	360	NA	Ub
21	Carbon Tetrachloride	<0.5	4.4	NA	Ub
22	Chlorobenzene	<0.5	21000	NA	Ub
23	Chlordibromomethane	1.2	34	NA	Ub
24	Chloroethane	0.6	N/A	NA	Ub, Uo
25	2-Chloroethylvinyl Ether	<10	N/A	NA	Ub, Uo
26	Chloroform	15	N/A	NA	Ub, Uo
27	Dichlorobromomethane	4.08	46	NA	Ub
28	1,1-Dichloroethane	<0.5	N/A	NA	Ub, Uo
29	1,2-Dichloroethane	<0.5	99	NA	Ub
30	1,1-Dichloroethylene	<0.5	3.2	NA	Ub
31	1,2-Dichloropropane	<0.5	39	NA	Ub
32	1,3-Dichloropropylene	<0.5	1700	NA	Ub
33	Ethylbenzene	1.8	29000	NA	Ub
34	Methyl Bromide	<0.5	4000	NA	Ub
35	Methyl Chloride	1.3	N/A	NA	Ub,Uo
36	Methylene Chloride	3.8	1600	NA	Ub
37	1,1,2,2-Tetrachloroethane	<0.5	11	NA	Ub
39	Toluene	3.6	200000	NA	Ub
40	1,2-Trans-Dichloroethylene	<0.5	140000	NA	Ub
41	1,1,1-Trichloroethane	<0.5	N/A	NA	Ub, Uo
42	1,1,2-Trichloroethane	<0.5	42	NA	Ub
43	Trichloroethylene	<0.5	81	NA	Ub
44	Vinyl Chloride	<0.5	525	NA	Ub
45	Chlorophenol	<0.92	400	NA	Ub
46	2,4-Dichlorophenol	<0.77	790	NA	Ub
47	2,4-Dimethylphenol	<2.9	2300	NA	Ub
48	2-Methyl-4,6-Dinitrophenol	<0.41	765	NA	Ub
49	2,4-Dinitrophenol	<0.4	14000	NA	Ub

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO (ug/L)	Maximum Background (µg/L)	RPA Results[2]
50	2-Nitrophenol	<0.54	NA	NA	Ub, Uo
51	4-Nitrophenol	<0.21	NA	NA	Ub, Uo
52	3-Methyl-4-Chlorophenol	<1.77	NA	NA	Ub,Uo,Ud
53	Pentachlorophenol	<0.59	7.9	NA	Ub
54	Phenol	<0.5	4600000	NA	Ub
55	2,4,6-Trichlorophenol	<0.69	6.5	NA	Ub
56	Acenaphthene[3]	<0.6	2700	0.0015	N
57	Acenephthylene[3]	<1.1	NA	0.00053	Uo
58	Anthracene[3]	<1.0	110000	0.0005	N
59	Benzidine	<0.05	0.00054	NA	Ub,U(dl)
60	Benzo(a)Anthracene[3]	<0.84	0.049	0.0053	U(dl)
61	Benzo(a)Pyrene	<1.20	0.049	0.0025	U(dl)
62	Benzo(b)Fluoranthene[3]	<1.65	0.049	0.0046	U(dl)
63	Benzo(ghi)Perylene[3]	<1.65	NA	0.006	Uo
64	Benzo(k)Fluoranthene[3]	<1.14	0.049	0.0015	U(dl)
65	Bis(2-Chloroethoxy)Methane	<1.01	NA	NA	Ub, Uo
66	Bis(2-Chloroethyl)Ether[3]	<0.91	1.4	NA	Ub,U(dl)
67	Bis(2-Chloroisopropyl)Ether	0.85	170000	NA	Ub
68	**Bis(2-Ethylhexyl)Phthalate**	**7.9**	**5.9**	**NA**	**Y**
69	4-Bromophenyl Phenyl Ether	<1.03	NA	NA	Ub, Uo
70	Butylbenzyl Phthalate	<0.62	5200	NA	Ub
71	2-Chloronaphthalene	<2.85	4300	NA	Ub
72	4-Chlorophenyl Phenyl Ether	<1.1	NA	NA	Ub, Uo
73	Chrysene[3]	<1.01	0.049	0.0041	U(dl)
74	Dibenzo(a,h)Anthracene[3]	<1.41	0.049	0.0006	U(dl)
75	1,2 Dichlorobenzene	1.2	17000	NA	Ub
76	1,3 Dichlorobenzene	0.74	2600	NA	Ub
77	1,4 Dichlorobenzene	1	2600	NA	Ub
78	3,3[1]-Dichlorobenzidine	<1.32	0.077	NA	Ub, U(dl)
79	Diethyl Phthalate	<0.32	120000	NA	Ub
80	Dimethyl Phthalate	<0.35	2900000	NA	Ub
81	Di-n-Butyl Phthalate	<0.7	12000	NA	Ub
82	2,4-Dinitrotoluene	<0.96	9.1	NA	Ub
83	2,6-Dinitrotoluene	<1.18	NA	NA	Ub,Uo
84	Di-n-Octyl Phthalate	<0.9	NA	NA	Ub,Uo
85	1,2-Diphenylhydrazine	<10	0.54	NA	Ub, U(dl)
86	Fluoranthene[3]	<0.086	370	0.007	N
87	Fluorene[3]	<1	14000	0.002078	N
88	Hexachlorobenzene	<0.04	0.00077	NA	Ub, U(dl)
89	Hexachlorobutadiene	<0.55	50	NA	Ub
90	Hexachlorocyclopentadiene	<0.33	17000	NA	Ub
91	Hexachloroethane	<0.59	8.9	NA	Ub
92	Indeno(1,2,3-cd) Pyrene[3]	<1.35	0.049	0.004	U(dl)
93	Isophorone	<0.91	600	NA	Ub
94	Naphthalene[3]	<0.001	NA	0.00229	Uo
95	Nitrobenzene	<0.91	1900	NA	Ub

# in CTR	PRIORITY POLLUTANTS	MEC or Minimum DL[1] (µg/L)	Governing WQO (ug/L)	Maximum Background (µg/L)	RPA Results[2]
96	N-Nitrosodimethylamine	<5	8.1	NA	Ub, U(dl)
97	N-Nitrosodi-n-Propylamine	<0.94	1.4	NA	Ub, U(dl)
98	N-Nitrosodiphenylamine	<5	16	NA	Ub
99	Phenanthrene[3]	<1	NA	0.0061	Uo
100	Pyrene[3]	<0.87	11000	0.0051	N
101	1,2,4-Trichlorobenzene	<1.26	NA	NA	Ub, Uo
102	Aldrin	<0.002	0.00014	NA	Ub, U(dl)
103	alpha-BHC	<0.001	0.013	NA	N
104	beta-BHC	<0.0016	0.046	NA	Ub
105	gamma-BHC	<0.0011	0.063	NA	Ub
106	delta-BHC	<0.001	NA	NA	Ub,Uo
107	Chlordane	<0.0034	0.00059	0.00018	U(dl)
108	4,4-DDT	<0.0033	0.00059	0.000066	U(dl)
109	**4,4-DDE**	**<0.0018**	**0.00059**	**0.00069**	**Y**
110	4,4-DDD	<0.003	0.00084	0.000313	U(dl)
111	**Dieldrin**	**<0.0019**	**0.00014**	**0.000264**	**Y**
112	alpha-Endosulfan	<0.0026	0.0087	0.000031	U(dl)
113	beta-Endosulfan	<0.0018	0.0087	0.000069	U(dl)
114	Endosulfan Sulfate	<0.0022	240	0.000011	N
115	Endrin	<0.0024	0.0023	0.000016	U(dl)
116	Endrin Aldehyde	<0.001	0.81	NA	Ub
117	Heptachlor	<0.0012	0.00021	0.000019	U(dl)
118	Heptchlor Epoxide	<0.0012	0.00011	0.000094	U(dl)
119-125	PCBs	<0.01	0.00017	NA	Ub, U(dl)
126	Toxaphene	<0.035	0.0002	NA	Ub, U(dl)
	Tributyltin	**0.02**	**0.01**	**NA**	**Y**

1) Maximum Effluent Concentration (MEC) in bold is the actual detected MEC, otherwise the MEC shown is the minimum detection level (if any of reported DLs < WQO).

NA = Not Available (there is not monitoring data for this constituent).

2) RP =Yes, if either MEC, or Background > WQO, or based on other information.
RP = No, if both MEC or background < WQO.
RP = Ud (undetermined due to lack of effluent monitoring data).
RP = Ub (undetermined due to lack of background data) if MEC < WQO and background is not available.
RP = U(dl) (undetermined due to high detection levels)
RP = Uo (undetermined if no objective promulgated).

ii. *Organic constituents with limited data*: Reasonable potential could not be determined for a majority of the organic priority or toxic pollutants due to

- applicable WQOs are lower than current analytical techniques can measure,
- applicable WQOs or WQCs, or
- adequate background data are absent.

iii. *Pollutant Monitoring.* Additional sampling for Constituents in the SIP is addressed in the Regional Board staff's August 6, 2001 letter "Requirements for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy" (the August 6, 2001 letter). As required by the letter, the Discharger is required to initiate or continue to monitor for those pollutants in this category using analytical methods that provide the best detection limits reasonably feasible. If detection limits improve to the point where it is feasible to evaluate compliance with applicable water quality criteria, these pollutants' RPA will be reevaluated in the future to determine whether there is a need to add numeric effluent limits to the permit or to continue monitoring.

iv. Pollutants with no reasonable potential: The Order does not contain WQBELs for constituents that do not have reasonable potential. However, monitoring for those pollutants is still required, as specified in the Order's Self-Monitoring Program and the Regional Board's August 6, 2001 letter formally requiring (pursuant to Section 13267 of the California Water Code) the Discharger to conduct ambient background monitoring for those constituents not currently sampled by the RMP and to provide this technical information to the Regional Board. If concentrations or mass loads of these constituents are found to have increased significantly, the Discharger will be required to investigate the source(s) of the increase(s). Remedial measures are required if the increases pose a threat to the receiving water's quality.

v. Permit Reopener: The permit includes a reopener provision to allow adding numeric effluent limits for any constituent that in the future exhibits reasonable potential. That determination will be made by the Regional Board, based on monitoring results.

2. Final Water Quality-Based Effluent Limits (WQBELs): The final effluent limitations in the Permit's Table 7, attached, Toxic Substances, are water quality-based. They were developed and set for the toxic and priority pollutants that were determined to have reasonable potential. Final effluent limitations were calculated based on appropriate WQOs, background concentrations at two central bay monitoring locations (Yerba Buena Island and Richardson Bay), a maximum dilution credit of 10:1 (for non-bioaccumulative pollutants), and the appropriate procedures specified in Section 1.4 of the SIP (See Table 6, attached of this Fact Sheet). For the purpose of the Proposed Order, final WQBELs refer to all non-interim effluent limitations. The WQO used for each pollutant with RP is indicated in Table C, below, as well as in Table 7, attached (WQOs).

TABLE C. Water Quality Objectives/Criteria for Pollutants with RP

Pollutant	Human Health WQO (µg/L)	Chronic WQO (µg/L)	Acute WQO (µg/L)	Basis of Lowest WQO Used in RP
Copper		3.7	5.8	CTR
Lead		5.6	140	Basin Plan
Mercury		0.025	2.1	Basin Plan
Nickel		7.1	140	Basin Plan
Silver		-	2.3	Basin Plan
Zinc		58	170	Basin Plan
Dioxin TEQ	0.000000014			CTR
Tributyltin		0.01		Basin Plan Narrative

Pollutant	Human Health WQO (µg/L)	Chronic WQO (µg/L)	Acute WQO (µg/L)	Basis of Lowest WQO Used in RP
				Objective, BPJ
Bis (2-ethyhexyl) Phthalate	5.9			CTR
4,4-DDE		0.00059	-	CTR
Dieldrin		0.00014	-	CTR

3. BASIS for 10:1 DILUTION CREDIT – Board staff believes a conservative limit of 10:1 dilution credit for discharges to the Bay is necessary for protection of beneficial uses.

   The basis for limiting the dilution credit is based on SIP provisions in Section 1.4.2. The following outlines the basis for derivation of the dilution credit. Detailed explanation of each point follows the list:

   a. A far-field background station is appropriate because the receiving waterbody (Bay) is a very complex estuarine system with highly variable and seasonal upstream freshwater inflows and diurnal tidal saltwater inputs.

   b. Due to the complex hydrology of the San Francisco Bay, a mixing zone cannot be accurately established.

   c. Previous dilution studies do not fully account for the cumulative effects of other wastewater discharges to the system.

   d. The SIP allows limiting a mixing zone and dilution credit for persistent pollutants (e.g., copper, silver, nickel and lead).

   The main justification for using a 10:1 dilution credit is uncertainty in accurately determining ambient background and uncertainty in accurately determining the mixing zone in a complex estuarine system with multiple wastewater discharges.

   a. **Complex Estuarine System Necessitates Far-Field Background** - The SIP allows background to be determined on a discharge-by-discharge or water body-by-water body basis (SIP section 1.4.3). Consistent with the SIP, Board staff has chosen to use a water body-by-water body basis because of the uncertainties inherent in accurately characterizing ambient background in a complex estuarine system on a discharge-by-discharge basis.

      With this in mind, the Yerba Buena Island and Richardson Bay Stations also fit the guidance for ambient background in the SIP compared to other stations in the Regional Monitoring Program. Section 1.4.3 of the SIP specifies that "preference should be given to...concentrations immediately upstream or near the discharge, but not within an allowed mixing zone for the discharge." The SIP further states that data are applicable if they are "representative of the ambient receiving water column that will mix with the discharge." Data from these stations are upstream, not within a mixing zone, and do represent water that will mix with the discharge. These stations are located near the Golden Gate. They are upstream in that they represent the water flushing in and out with each tidal cycle. This water is a blend of fresh ocean water and Bay water. About 20 to 25 percent of the water in the Bay is exchanged with each tidal cycle (Water Quality

Control Plan Report, San Francisco Bay Basin, April 1975, Part II Supporting Information, Chapter 11). For most of the Bay, the waters represented by these stations make up a large part of the receiving water that will mix with the discharge.

b. **Uncertainties Prevent Accurate Mixing Zones in Complex Estuarine Systems** -There are uncertainties in accurately determining the mixing zones for each discharge. The models that have been used by dischargers to predict dilution have not considered the three-dimensional nature of the currents in the estuary resulting from the interaction of tidal flushes and seasonal fresh water outflows. Salt water is heavier than fresh water. Colder salt water from the ocean flushes in twice a day generally under the warmer fresh rivers waters that flows out annually. When these waters mix and interact, complex circulation patterns occur due to the different densities of these waters. These complex patterns occur throughout the estuary but are most prevalent in the San Pablo Bay, Carquinez Strait, and Suisun Bay areas. The locations change depending on the strength of each tide and the variable rate of delta outflow. Additionally, sediment loads to the Bay from the Central Valley also change on a longer-term basis. These changes can result in changes to the depths of different parts of the Bay making some areas more shallow and/or other areas more deep. These changes affect flow patterns that in turn can affect the initial dilution achieved by a discharger's diffuser.

c. **Dye studies do not account for cumulative effects from other discharges** - The tracer and dye studies conducted are often not long enough in duration to fully assess the long residence time of a portion of the discharge that is not flushed out of the system. In other words, some of the discharge, albeit a small portion, makes up part of the dilution water. So unless the dye studies are of long enough duration, the diluting effect on the dye measures only the initial dilution with "clean" dilution water rather than the actual dilution with "clean" dilution water plus some amount of original discharge that resides in the system. Furthermore, both models and dye studies that have been conducted have not considered the effects of discharges from other nearby discharge sources, nor the cumulative effect of discharges from over 20 other major dischargers to San Francisco Bay system. While it can be argued the effects from other discharges are accounted for by factoring in the local background concentration in calculating the limits, accurate characterization of local background levels are also subject to uncertainties resulting from the interaction of tidal flushing and seasonal fresh water outflows described above.

d. **Mixing Zone Is Further Limited for Persistent Pollutants**- Discharges to the Bay are not completely-mixed discharges as defined by the SIP. Thus, the dilution credit should be determined using site specific information for incompletely-mixed discharges. The SIP in section 1.4.2.2 specifies that the Regional Board "significantly limit a mixing zone and dilution credit as necessary... For example, in determining the extent of ... a mixing zone or dilution credit, the RWQCB shall consider the presence of pollutants in the discharge that are ... persistent." The SIP defines persistent pollutants to be "substances for which degradation or decomposition in the environment is nonexistent or very slow." The pollutants at issue here are persistent pollutants (e.g., copper, lead, nickel). The dilution studies that estimate actual dilution do not address the effects of these persistent pollutants in the Bay environment, such as their long-term effects on sediment concentrations."

4. This Order sets interim limits for copper, and mercury, based on the Discharger's April 25, 2002, Feasibility Study, which demonstrated that immediate compliance with the WQBELs for those pollutants is infeasible. The interim limit for copper is based on the pervious permit

limit because the calculated plant performance (Table 10) is higher than the previous permit limit. The interim limit for mercury is based on a statistical analysis of pooled ultraclean mercury data for POTWs throughout the San Francisco Bay Region.

5. The interim limits for tributyltin and Bis(2-ethylhexyl)phthalate cannot be calculated because there are not enough data available to calculate performance based interim limit and there is no previous permit limit. Therefore, based on Regional Board staff's best professional judgment, and consistent with the approach used in similar situations for other POTWs dischargers, the discharger is required to conduct accelerated monitoring to collect data for interim limit calculations.

6. The interim limit for dioxin TEQ cannot be calculated because the detection limits used by the Discharger for dioxin congeners is insufficient to determine the concentration of the congeners.

7. Compliance Schedules and Infeasibility Analysis

   If the Discharger is unable to immediately comply with the WQBELs contained in this Permit, it is required to demonstrate its infeasibility to immediately comply with these limits by demonstrating the extent to which past pollution prevention efforts have been implemented, as well as measurements of the efforts' effectiveness and future plans for focused pollution prevention efforts.

8. Further Discussion and Rationale for Mercury WQBELs and Mass-Based Effluent Limitations

   As shown in the attached Table 9, attached (Limits), the calculated final average monthly and daily maximum effluent limits for mercury are 0.020 µg/L and 0.041 µg/L, respectively. Due to the limited data set of ultraclean mercury results for this Discharger, it is not possible to accurately predict its ability to immediately comply with these WQBELs. Therefore, based on Regional Board staff's Best Professional Judgment, it is appropriate to set an IPBL for mercury of 0.087 µg/L, based on the statistical analysis of pooled ultraclean mercury for POTWs, as described in the June 11, 2001 staff report referenced in the Order.

   The Order also includes an interim mercury mass-based effluent limitation of 0.30 kilograms per month. This mass-based effluent limitation is calculated as shown in Table 12, attached (Mercury Mass Limit), and is based on facility flow and mercury concentration data collected between November 1998 and December 2001. This mass-based effluent limitation will maintain current loadings until a TMDL is established. The final mass -based effluent limitation will likely be based on the WLA contained in the mercury TMDL.

5. Basis for Wet Weather Effluent Performance Criteria

These criteria were derived from the design criteria of the wet weather facilities. This requirement is based on the CSO Policy and BPJ.

6. Basis for Receiving Water Limitations

a) Receiving water limitations D.1 (conditions to be avoided): These limits are based on the previous Order and the narrative/numerical objectives contained in Chapters 2 and 3 of the Basin Plan

b) Receiving water limitation D.2 (compliance with State Law): This requirement is in the previous permit, requires compliance with Federal and State law, and is self-explanatory.

c) Receiving water limitation D.3 (Water Quality Standards): This requirement is based on the previous permit and BPJ.

7. Basis for Self Monitoring Program Requirements

The SMP includes monitoring for conventional, non-conventional, and toxic pollutants, and acute and chronic toxicity. For the most part, dry weather monitoring is similar to that required by the previous Order, including the amended requirements for fecal coliform. The TSS monitoring for the influent is five times per week because the Regional Board believes that these levels of performance monitoring are appropriate for large municipal treatment facilities. Current knowledge indicates that TSS is a better indicator of proper functioning for solids removal than settleable solids and therefore, based on Regional Board staff's best professional judgment, settleable matter monitoring is reduced from five times per week in the previous permit to monthly in this one. In addition, the influent BOD and TSS monitoring frequencies are now consistent with effluent monitoring for these parameters. This will allow better evaluation of percent removal efficiency. Monthly metals, mercury, and cyanide monitoring is consistent with the previous order. Monitoring for bis(2-ethylhexyl)phthalate, 4,4-DDE, dieldrin, and tributyltin is required to demonstrate compliance with effluent limits. Finally, previous monitoring for toxic organic pollutants is replaced by more comprehensive monitoring as demonstrated by participation in the Regional Ambient Monitoring Program.

8. Basis for Sludge Management Practices

These requirements are based on Table 4.1 of the Basin Plan, and 40 CFR 503.

9. Basis for Provisions

a) Provisions 1. (Permit compliance and rescission of previous permit): Time of compliance is based on 40 CFR 122. The basis of the order superseding and rescinding the previous permit order is 40 CFR 122.46.

b) Provision 2. (Effluent Characterization Study): This provision is based on the SIP.

c) Provision 3. (Ambient Background Receiving Water Study): This provision is based on the Basin Plan and the SIP.

d) Provision 4 (Wet Weather Facility System Study): This is based on the Basin Plan and BPJ. Since the nine minimum controls are primarily narrative, it is necessary to occasionally audit the Discharger's operation and maintenance using experts in the field. This is primarily to ensure that the Discharger has minimized overflows and maximized treatment.

e) Provision 5 (Dioxin Special Study): This based on the Basin and BPJ. The detection limit used by the Discharger is insufficient to determine the concentration of the dioxin congeners. Therefore, an interim limit for dioxin TEQ cannot be calculated. This provision requires the Discharger to investigate lowering the detection limit for dioxin TEQ congeners and conduct additional monitoring which would allow the Board to calculate an interim limit for dioxin TEQ.

f) Provision 6 (Tributyltin Special Study): This is based on the SIP and BPJ. Since there is no background data to calculate final effluent limitations and interim limitations, it is necessary for the discharger to conduct additional effluent monitoring.

g) Provision 7 (Bis(2-ethylhexyl)phthalate Special Study): This is based on the Basin Plan and BPJ. There is insufficient data to calculate an interim effluent limit for bis(2-ethylhexyl)phthalate. In addition, the Discharger has presented comments that some detections of bis(2-ethylhexyl)phthalate in the effluent might be due to laboratory contamination. Therefore, this provision requires the Discharger to investigate and improve sampling and analysis procedures for bis(2-ethylhexyl)phthalate to avoid laboratory contamination. It also requires the Discharger to conduct additional effluent monitoring.

h) Provision 8 (Odor Control Master Plan): This is based on the Basin Plan, and BPJ. Frequently, the neighbors complain that odor from the Discharger's collection system and treatment facilities create a nuisance condition. This provision requires the Discharger to update and revise it Odor Control Master Plan to include source investigation, source mitigation, air monitoring, and an implementation schedule.

h) Provision 9. (Pollution Prevention and Pollutant Minimization Program): This provision is based on the Basin Plan (pp 4 – 25 and 4 – 26) and the SIP (section 2.1, Compliance Schedule).

i) Provision 10. (Nine Minimum Controls): This provision establishes technology based requirements for the Discharger's wet weather operations. This is based on the CSO Policy, Nine Minimum Controls, previous permit, and BPJ.

j) Provision 11. (Whole Effluent Acute Toxicity): This provision establishes conditions by which compliance with permit effluent limits for acute toxicity will be demonstrated. Conditions include the use of 96-hour bioassays, flow-through bioassays for discharges to Central and Lower San Francisco Bay, the use of three-spine stickleback as the test species for 3rd Edition U.S. EPA protocol and fathead minnow or rainbow trout as the test species for 4th Edition U.S. EPA protocol, and use of approved test methods as specified. On July 1, 2003, the Discharger shall change from 3rd to 4th Edition U.S. EPA protocols. These conditions are based on the effluent limits for acute toxicity given in the Basin Plan, Chapter 4, and BPJ.

k) Provision 12. (Whole Effluent Chronic Toxicity): This provision establishes conditions and protocol by which compliance with the Basin Plan narrative water quality objective for toxicity will be demonstrated. Conditions include required monitoring and evaluation of the effluent for chronic toxicity and numerical values for chronic toxicity evaluation to be used as 'triggers' for initiating accelerated monitoring and toxicity reduction evaluation(s). These conditions apply to the discharges to Central and Lower San Francisco Bay and the numerical values for chronic toxicity evaluation are based on a minimum initial dilution credit of 10:1. This provision also requires the Discharger to conduct a screening phase monitoring requirement and implement toxicity identification and reduction evaluations when there is consistent chronic toxicity in the discharge. New testing species and/or test methodology may be available before the next permit renewal. Characteristics, and thus toxicity, of the process wastewater may also have been changed during the life of the permit. This screening phase monitoring is important to help determine which test species is most sensitive to the toxicity of the effluent for future compliance monitoring. The proposed conditions in the draft permit for chronic toxicity are based on the Basin Plan narrative water quality objective for toxicity, Basin Plan effluent limits for chronic toxicity (Basin Plan, Chapter 4), U.S. EPA and SWRCB Task Force guidance, applicable federal regulations [40 CFR 122.44(d)(1)(v)], and BPJ.

l) Provision 13. (Regional Monitoring Program): This provision, which requires the Discharger to continue to participate in the Regional Monitoring Program, is based on the previous Order and the Basin Plan.

m) Provision 14. (Pretreatment Program): The Discharger has implemented and is maintaining a U.S. EPA approved pretreatment program in accordance with Federal pretreatment regulations (40 CFR 403) and the requirements specified in Attachment F "Pretreatment Requirements" and its revisions thereafter.

n) Provision 15. (Optional Mass Offset): This option is provided to encourage the Discharger to implement aggressive reduction of mass loads to Central and Lower San Francisco Bay. San Francisco has already accomplished a significant reduction of pollutant loading during wet weather conditions as a result of the Combined Sewer System and Operations.

o) Provision 16. (Copper Translator Study): This provision allows the Discharger to conduct an optional copper translator study, based on SIP Section 1.4 ("Translator for Metals and Selenium") and BPJ. This provision is based on the need to gather site-specific information in order to apply a different translator from the default translator specified in the CTR and SIP. Without site-specific data, the default translator of 0.83 has been used with the CTR criterion to obtain a total copper objective of 3.7 µg/L.

p) Provision 17. (Wastewater Facilities, Review and Evaluation, and Status Reports): This provision is based on the previous Order and the Basin Plan.

q) Provision 18. (Operations and Maintenance Manual, Review and Status Reports): This provision is based on the Basin Plan, requirements of 40 CFR 122 and the previous permit.

r) Provision 19. (Contingency Plan). The Contingency Plan provision is based on the requirements stipulated in Board Resolution No. 74-10 and the previous permit.

s) Provisions 20. (Annual Status Reports): The Annual Status Reports are based on the previous permit and the Basin Plan.

t) Provision 21. (303(d)-listed Pollutants Site-Specific Objective and TMDL Status Review): This provision requires participation in the development of a TMDL or site-specific objective for copper, nickel, mercury, 4,4 DDE, and dieldrin. By January 31 of each year, the Discharger shall submit an update to the Regional Board to document progress made on source control and pollutant minimization measures and development of TMDL or site-specific objective. Regional Board staff shall review the status of TMDL development. The order may be reopened in the future to reflect any changes required by TMDL development.

u) Provision 22. (New Water Quality Objectives): This provision allows future modification of the permit and permit effluent limits as necessary in response to updated water quality objectives that may be established in the future. This provision is based on 40 CFR 123.

v) Provision 23. (Self-Monitoring Program Requirement): The Discharger is required to conduct monitoring of the permitted discharges in order to evaluate compliance with permit conditions. Monitoring requirements are given in the Self Monitoring Program (SMP) of the Permit. This provision requires compliance with the SMP, and is based on 40 CFR 122.44(i), 122.62, 122.63 and 124.5. The SMP is a standard requirement in almost all NPDES permits (including the Order) issued by the Regional Board. In addition to containing definitions of terms, it specifies general sampling/analytical protocols and the requirements of reporting of spills, violations, and routine monitoring data in accordance with NPDES regulations, the California Water Code, and Board's policies. The SMP also contains a sampling program specific for the Discharger's treatment facilities. It defines the sampling stations and frequency, pollutants to be monitored,

and additional reporting requirements. Pollutants to be monitored include all parameters for which effluent limitations are specified. Additional constituents, for which no effluent limitations are established, are also required to be monitored to provide data for future determination of their reasonable potential of exceeding the applicable WQOs or WQCs in the receiving water.

w) Provision 24. (Standard Provisions and Reporting Requirements): The purpose of this provision is to require compliance during dry weather with the standard provisions and reporting requirements given in this Board's document titled, Standard Provisions and Reporting Requirements for NPDES Surface Water Discharge Permits, August 1993, or any amendments thereafter. This document is included as part of the permit as an attachment of the permit. Where provisions or reporting requirements specified in the permit are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions', the specifications given in the permit shall apply. The standard provisions and reporting requirements given in the above document are based on various state and federal regulations with specific references cited therein.

x) Provision 25. (Change in Control or Ownership): This provision is based on 40 CFR 122.61.

y) Provision 26. (Permit Reopener): This provision is based on 40 CFR 123.

z) Provision 27. (NPDES Permit and U.S. EPA concurrence). This provision is based on 40 CFR 123.

aa) Provision 28. (Permit Expiration and Reapplication): This provision is based on 40 CFR 122.46 (a)

9. WRITTEN COMMENTS

- Interested persons are invited to submit written comments concerning this draft permit.
- Comments should be submitted to the Regional Board no later than **5:00 P.M.** on **May 31, 2002.**
- Comments received after this date may not receive full consideration in the formulation of final determinations of permit conditions.
- Comments should be submitted to the Regional Board at the address given on the first page of this fact sheet, and addressed to the attention of: Ms. Judy C. Huang.

10. PUBLIC HEARING

- The draft permit will be considered for adoption by the Regional Board at a public hearing during the Regional Board's regular monthly meeting to be held on: June 19, 2002, starting at 9:00 a.m.
- This meeting will be held at:

Main Floor Auditorium
Elihu Harris State Office Building
1515 Clay Street, Oakland, California

11. WASTE DISCHARGE REQUIREMENT APPEALS

Any person may petition the State Water Resources Control Board to review the decision of the Regional Board regarding the Waste Discharge Requirements. A petition must be made within 30 days of the Regional Board public hearing.

12. ADDITIONAL INFORMATION

For additional information about this matter, interested persons should contact the following Regional Board staff member: Ms. Judy C. Huang, Phone number: (510) 622-2363, or by email at jch@rb2.swrcb.ca.gov.

13. ATTACHED TABLES

Table 1 – Discharger's Effluent Data for Metals
Table 2 – Discharger's Effluent Data for Organic Pollutants
Table 3 – Discharger's Effluent Data for PAHs
Table 4 – Discharger's Effluent Data for Cyanide
Table 5 – Discharger's Effluent Data for Dioxin
Table 6 – Reasonable Potential Analysis
Table 7 – Basin Plan Water Quality Objectives and CTR Water Quality Criteria.
Table 8 – Ambient Background Data for RPA and Limit Calculations.
Table 9 – Final Limit Calculations Using SIP Procedures.
Table 10 – Interim Copper Concentration Limit Calculations
Table 11 – Salinity Data
Table 12 – Mercury Mass Limit Calculation

14. ATTACHED DOCUMENTS

Attachment A: Determination of Technology-Based Requirements for NPDES Permit No. CA0038610, Bayside Facilities, City and County of San Francisco

Table 1
Effluent Metal Data

Date		Arsenic		Cadmium		Chromium (Total)		Copper		Lead		Nickel		Selenium		Silver		Zinc		Mercury
		2		4		5		6		7		9		10		11		13		8
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
11/2/98	<	1.9	<	0.2		1.3		15.5		3.3		3.2		0.66	<	2.1		41.4		0.019
11/18/98		2.6	<	0.2		1.2		15.2		4.5		3.7		0.72	<	2.1		66.3		0.023
11/25/98	<	1.9	<	0.2		0.7		18.3		4.5		3.8		0.57	<	2.1		99.9		0.012
12/11/98		3.5	<	0.2		4.8		9.3		2.2		4.1		1	<	2.1		40.5		0.007
12/19/98		1.9	<	0.2		0.9		12		2.2		3.3		1.16	<	2.1		44.7		0.019
12/20/98	<	1.9		0.5		0.6		11.2		2.6		2.7		0.69	<	2.1		48		0.039
1/1/99	<	1.9	<	0.2		2.7		8.4	<	2.1		2.9		1.66	<	2.1		36.3		0.006
1/9/99		2.7		1.33	<	0.3		12.7		2.3		5		0.71	<	2.1		47.6	<	0.005
1/10/99	<	1.9	<	0.2		9.2		12.7	<	2.1		4.5		0.41	<	2.1		56.2	<	0.005
1/25/99	<	1.9	<	0.2		2.9		7.4	<	2.1		3		0.54	<	2.1		37.6		0.022
2/1/99		2.72	<	0.2		0.7		11.64	<	2.1		4.183		0.86	<	2.1		62.411		0.031
3/5/99		2.4	<	0.2		0.9		10.4	<	2.1		3.3	<	0.3	<	2.1		48.5		0.023
3/13/99		3.1	<	0.2		1		10.5	<	2.1		3.5		1.9	<	2.1		42.2		0.027
4/1/99	<	1.9	<	0.2		1.12		7.41	<	2.1		3.28		0.9	<	2.1		39.89		0.04
4/14/99	<	1.9	<	0.2		0.63		14.12	<	2.1		2.92	<	0.3	<	2.1		54.51		0.04
4/23/99	<	1.9		0.25	<	0.3		4.9	<	2.1		1.09	<	0.3	<	2.1		31.98		0.05
5/1/99	<	1.9	<	0.2		1.1		8.9	<	2.1		2.78		0.97	<	2.1		37.3		0.037
5/2/99	<	1.9	<	0.2		0.8		9.6	<	2.1		3.39		0.26	<	2.1		44.4		0.031
5/10/99	<	1.9	<	0.2		0.5		7.8	<	2.1		2.6	<	0.25	<	2.1		31.6		0.027
5/18/99		2	<	0.2		0.5		6.5	<	2.1		2.74	<	0.25	<	2.1		33.5		0.031
5/26/99		2.7	<	0.2		1		7.6	<	2.1		4.08		0.915	<	2.1		38.9		0.016
6/3/99		2.4	<	0.2		0.66		6.53	<	2.1		3.93	<	0.25	<	2.1		43.04		0.049
6/11/99		3.71	<	0.2		1.34		10.42	<	2.1		4.62	<	0.25	<	2.1		56.87		0.0611
6/19/99		2.06		0.24		1.08		10.87	<	2.1		3.14	<	0.25	<	2.1		34.56		0.0284
6/20/99		2.44	<	0.2		0.86		9.55	<	2.1		3.48	<	0.25	<	2.1		31.19		0.0337
7/1/99	<	1.9		0.22		1.4		9.6	<	2.1		4.2		0.89	<	2.1		24.6		0.026
7/5/99	<	1.9	<	0.2		1		7.4	<	2.1		3.7	<	0.25	<	2.1		23.8		0.016
7/13/99	<	1.9	<	0.2		1.1		10.4	<	2.1		3.9	<	0.25	<	2.1		37.9		0.022
7/21/99		2.8	<	0.2		0.7		10.9	<	2.1		4.7		0.66	<	2.1		26.6		0.03
7/25/99		5.1		0.25		1.4		7.2	<	2.1		3.7	<	0.25	<	2.1		19		0.018
8/5/99	<	1.9	<	0.2		0.9		7.3	<	2.1		4.1		0.29	<	2.1		22.9		0.0637
8/13/99		2	<	0.2		0.8		6.7	<	2.1		4.3	<	0.25	<	2.1		20.8		0.0336
8/21/99	<	1.9	<	0.2		0.7		7.4	<	2.1		3.6		0.29	<	2.1		19.3		0.0306
8/23/99	<	1.9	<	0.2		0.8		5.8	<	2.1		4.2	<	0.25	<	2.1		21.9		0.028
9/4/99	<	1.9	<	0.2		1.7		7.9		3.1		3.9		0.3	<	2.1		35.9		0.033
9/7/99	<	1.9	<	0.2		1.0		6.6	<	2.1		3.8	<	0.3	<	2.1		42.3		0.003

Table 1
Effluent Metal Data

Date		Arsenic		Cadmium		Chromium (Total)		Copper		Lead		Nickel		Selenium		Silver		Zinc		Mercury
		2		4		5		6		7		9		10		11		13		8
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
9/16/99	<	1.9	<	0.2		1.3		10.8		2.4		4.5		0.3	<	2.1		48.6		0.010
9/24/99	<	1.9		0.24		0.9		6.3	<	2.1		3.6	<	0.3	<	2.1		36.4		0.003
10/2/99	<	1.9	<	0.2		1.19		8.7		1.1		4.1	<	0.3	<	0.5		42.6		0.006
10/3/99	<	1.9	<	0.2		1.33		8.6	<	1.1		3.5	<	0.3	<	0.5		33.9		0.005
10/11/99	<	1.9	<	0.2		0.78		11.3		1.4		3.7	<	0.3	<	0.5		49.8		0.004
10/19/99	<	1.9	<	0.2		0.78		10.5	<	1.1		3.7	<	0.3	<	0.5		43.7		0.003
10/24/99	<	1.9	<	0.2		1.08		12.4		1.1		2.9	<	0.3		0.75		24.0		0.015
11/3/99	<	1.9	<	0.20	<	0.3		14	<	1.1		3.8		0.35		0.6		58.0		0.098
11/11/99	<	1.9	<	0.20		0.3		18.7	<	1.1		4.0		0.58	<	0.5		73.3		0.010
11/21/99	<	1.9	<	0.20		1		16.9		2.5		3.4		0.34	<	0.5		58.7		0.023
12/11/99	<	1.9	<	0.20		2.5		19.3		2.3		4.7		0.45	<	0.5		63.5		0.007
12/13/99	<	1.9	<	0.20		1.6		20.1		1.8		5.5	<	0.25	<	0.5		62.8		0.1
12/21/99	<	1.9	<	0.20		1.2		29.6		1.6		5	<	0.25	<	0.5		59.4		0.008
1/3/00	<	1.9	<	0.2		1.9		14.7		2.2		3.3	<	0.5	<	0.5		50.1		0.006
1/25/00		3	<	0.2		5.9		21.5		14.5		6.5		0.8		1		83.3		0.0088
2/2/00	<	1.9	<	0.2		2.1		25.3		2.7		5.3		0.78	<	0.5		72.9		0.008
2/8/00	<	1.9	<	0.2		0.9		23.6		2.1		3.8	<	0.5	<	0.5		62.5		0.012
3/1/00	<	1.9		0.23		2.9		21.8		8.6		4.8	<	0.5		0.9		68.8		0.051
3/15/00		2.2	<	0.2		1.6		18.9		7.7		4.7	<	0.5		1.1		60.1		0.031
3/11/00	<	1.9	<	0.2		1.1		33.3		4.8		3.6	<	0.5	<	0.5		53.1		0.006
3/29/00	<	1.9	<	0.2		1.2		18		4.1		4.1	<	0.5		2.3		48.2		0.009
4/6/00		3	<	0.2		7		9.6		2.5		4.1	<	0.5	<	0.5		50.5	<	0.005
4/20/00		2	<	0.2		2.3		11.5		2.8		5.5	<	0.5		0.7		70.5		0.007
4/27/00		2.7	<	0.2		0.5		11.3		2.3		3.6		1.16		0.5		52.0		0.005
5/6/00	<	1.9	<	0.2		7.5		6.4	<	1.1		3.5		1.3		0.6		44.8		0.00738
5/12/00	<	1.9	<	0.2		3.4		8.9	<	1.1		4.1		1	<	0.5		47.2		0.00602
5/19/00	<	1.9	<	0.2		3.1		13.3	<	1.1		3.8	<	1	<	0.5		62		0.00646
5/26/00	<	1.9	<	0.2		1.8		8.4	<	1.1		2.9	<	1	<	0.5		34.7		0.0114
6/3/00	<	1.9		0.34		0.8		20.4		3.5		2.7	<	0.25		0.6		80.9		0.007
6/10/00	<	1.9	<	0.2		1		12.7	<	1.1		3.9		1.36	<	0.5		57.6		0.007
6/17/00	<	1.9	<	0.2		0.7		13.5	<	1.1		2.3	<	0.25	<	0.5		52		0.005
6/24/00	<	1.9	<	0.2		0.7		11.1	<	1.1		3.9	<	0.25	<	0.5		47.6		0.007
7/2/00	<	1.9	<	0.2		5.5		10.9		1.3		4.5		1.23	<	0.5		54		0.0098
7/9/00	<	1.9	<	0.2		3.5		10.9		1.1		5		1.3	<	0.5		62.4		0.0128
7/16/00	<	1.9	<	0.2		1.6		9.7	<	1.1		3.9		1.3	<	0.5		55.8		0.0074
7/23/00		2	<	0.2		1.5		9.7		1.9		4.2		1.18	<	0.5		50.8		0.0121

Table 1
Effluent Metal Data

Date		Arsenic		Cadmium		Chromium (Total)		Copper		Lead		Nickel		Selenium		Silver		Zinc		Mercury
		2		4		5		6		7		9		10		11		13		8
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
7/30/00	<	1.9	<	0.2		1.1		12.4		1.3		3.5		1.22	<	0.5		62.1		0.013
8/7/00		2.8		0.75		2.4		32.4		9.3		5.7		0.53		3.6		80.8		0.136
8/14/00	<	1.9		0.24	<	0.3		16.1	<	1.1		3.8	<	0.25	<	0.5		38.6		0.009
8/21/00	<	1.9	<	0.2		1.4		30.7		4.7		4.2	<	0.25		1.5		68.3		0.044
8/28/00		2.1		5.21		0.6		31.5		4.5		4.8	<	0.25		1.3		72.7		0.035
9/5/00	<	1.9		0.28		0.66		25.14		2.55		3.59		0.41		1.03		78.27		0.029
9/1/00	<	1.9	<	0.2		0.71		19.81		2.72		3.73		0.45		1.07		74.71		0.033
9/20/00	<	1.9		0.3		1.15		24.2		3.04		3.83		0.27		1.12		51.16		0.041
9/28/00	<	1.9	<	0.2		1.56		16.29		1.98		3.64		0.3		0.75		67.98		0.025
10/4/00		3.1		0.28		1.2		22.5		5.1		4	<	0.25		0.7		99		0.016
10/11/00		2.2		0.31		1		28		6		4.7		0.28		0.8		136.1		0.046
10/18/00		2.1		0.28		0.8		21.7		2.1		4.2	<	0.25		0.5		87.8		0.016
10/25/00		3.6	<	0.2		1.5		16.5		3.7		4.1	<	0.25	<	0.5		95.3		0.016
11/3/00		2.9	<	0.2		0.9		11.7		4.3		3.2	<	0.5	<	0.5		80.2		0.007
11/9/00	<	1.9	<	0.2		1.5		15.5		2.2		4.1	<	0.5		0.7		70.8		0.017
11/17/00		2.8		0.23		0.7		16.6		1.3		3.2		1.3	<	0.5		79		0.005
11/21/00		2.6	<	0.2		0.8		15.5	<	1.1		4.6	<	0.5		0.8		50.2		0.011
12/2/00		2.8	<	0.2	<	0.3		13.4	<	1.1		3.8	<	0.25	<	0.5		74.9		0.003
12/9/00		3.8	<	0.2	<	0.3		13		1.6		3.6		0.41		0.8		50.4		0.019
12/16/00		2.4	<	0.2		1.2		17.4		1.2		2.7		0.33		1		52.5		0.004
12/23/00	<	1.9	<	0.2	<	0.3		10.6	<	1.1		3.9		0.46		0.7		42.3		0.007
1/7/01		2.4	<	0.20	<	0.3		13.6	<	1.1		4.3	<	0.50	<	0.5		59.5		0.0060
1/14/01		3.1	<	0.20		0.5		22.8		1.9		4.3	<	0.50	<	0.5		90.9		0.0090
1/21/01	<	1.9	<	0.20	<	0.3		16.8	<	1.1		3.5	<	0.50	<	0.5		58.9		0.0080
1/28/01		2.1	<	0.20		0.6		12.2		2.8		3.4	<	0.50	<	0.5		69.3		0.0060
2/5/01	<	1.9	<	0.20	<	0.3		19.8		3.4		3.2	<	0.50	<	0.5		59.9		0.0060
2/14/01	<	1.9		0.26		3.7		24.9		**14.9**		6.1	<	0.47		1.6		204.9		0.1690
2/26/01		2.9	<	0.20		1.5		20.6		3.1		6.1	<	0.50	<	0.5		67.4		0.0150
3/6/01	<	1.9	<	0.20		1.3		9.9		2.8		2.5		0.40	<	0.5		44.6		0.0110
3/13/01	<	1.9	<	0.20		0.9		12.8	<	1.1		3.6		0.29	<	0.5		45.8		0.0060
3/20/01	<	1.9	<	0.20		0.6		15.4	<	1.1		**8.2**		0.31	<	0.5		44.2		0.0060
3/27/01	<	1.9	<	0.20		0.9		14.0	<	1.1		7.2		0.55	<	0.5		66.5		0.0050
4/4/01	<	1.9	<	0.20		0.9		13.5	<	1.1		3.7		0.53	<	0.5		57.4		0.0070
4/11/01	<	1.9	<	0.20		0.9		16.9	<	1.1		6.1		0.52	<	0.5		75.1		0.0080
4/18/01	<	1.9	<	0.20		1.0		18.9	<	1.1		3.9		0.49	<	0.5		63.8		0.0070
4/25/01	<	1.9	<	0.20		0.8		23.1	<	1.1		3.8		0.47	<	0.5		71.3		0.0193

Table 1
Effluent Metal Data

Date		Arsenic		Cadmium		Chromium (Total)		Copper		Lead		Nickel		Selenium		Silver		Zinc		Mercury
		2		4		5		6		7		9		10		11		13		8
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
5/3/01	<	1.2	<	0.11		0.7		14.9		1.2		4.1	<	0.50		0.4		76.8		0.0030
5/10/01		1.2	<	0.11		0.6		17.5		1.4		3.4		0.66		0.4		64.7		0.0070
5/17/01	<	1.2		0.15	<	0.6		16.3		1.3		3.9	<	0.50		0.4		66.3		0.0040
5/24/01		1.4		0.12	<	0.6		15.7		1.9		3.7	<	0.50		0.6		72.7		0.0050
5/31/01	<	1.2		0.12	<	0.6		13.6		1.4		3.7	<	0.50		0.5		67.2		0.0050
6/6/01	<	1.2		0.16	<	0.6		19.2		1.3		3.4	<	0.40		0.5		281.3		0.0070
6/8/01		1.6	<	0.11		0.6		18.9		1.7		3.6	<	0.40		0.5		70.7		0.0060
6/15/01		2.1	<	0.11		0.6		14.4		1.7		3.7	<	0.40		0.4		69.2		0.0060
6/22/01	<	1.2	<	0.11		0.7		14.1		2.1		3.4	<	0.40		0.4		63.3		0.0050
6/29/01	<	1.2		0.15		0.9		23.8		6.2		5.6		0.57		0.8		127.1		0.0140
7/9/01	<	1.2	<	0.11	<	0.6		16.2		2.1		2.9	<	0.50		0.4		66.0		0.0056
7/13/01	?	1.2	<	0.11	<	0.6		13.4		1.1		3.8	<	0.50		0.3		63.1		0.0074
7/21/01	<	1.2		1.28		1.1		20.3		4.0		4.8		0.93		0.7		82.1		0.0194
7/28/01	?	1.2	<	0.11	<	0.6		14.7		1.2		2.4		0.94		0.2		82.7		0.0063
8/4/01		1.6	<	0.11		0.8		15.9		1.3		4.0	<	0.50		0.3		62.9		0.0060
8/11/01		2.3		0.27		1.1		23.6		6.3		4.3	<	0.50		0.3		106.3		0.0090
8/18/01		3.0		0.14		1.3		15.3		2.5		4.4	<	0.50		0.3		56.1		0.0060
8/22/01		2.0		0.26		0.7		21.8	<	1.0		3.9	<	0.50		0.6		**364.8**		0.0140
8/25/01		3.2	<	0.11		0.8		12.2		1.7		3.9	<	0.50		0.5		38.3		0.0120
9/4/01	<	1.2		0.16	<	0.6		12.0		2.8		3.2		0.71	<	0.2		44.6		0.0040
9/10/01	<	1.2	<	0.11	<	0.6		12.7		3.6		3.5		0.60	<	0.2		43.7		0.0060
9/17/01	<	1.2		0.13	<	0.6		12.5		4.2		2.4	<	0.50	<	0.2		46.5		0.0050
9/24/01	<	1.2		0.13		0.6		11.9		2.8		3.7	<	0.50	<	0.2		47.7		0.0050
10/1/01		1.5		0.17	<	0.6		15.0		1.5		3.9	<	0.5	<	0.2		65.9		0.0060
10/9/01	<	1.2		0.15	<	0.6		12.6		1.1		4.4	<	0.5	<	0.2		63.7		0.0040
10/16/01		1.8		0.15	<	0.6		10.9	<	1.0		4.5	<	0.5	<	0.2		54.5		0.0030
10/24/01		1.6		0.20		0.7		12.8		3.0		5.1	<	0.5		0.4		72.6		0.0220
11/8/01	<	1.2		0.19		0.7		19.8		1.7		3.9		0.68		0.5		66.9		0.0070
Mean (ug/L)		2.04		0.26		1.29		14.61		2.49		3.94		0.55		1.03		61.77		0.02
Standard Deviation		0.61		0.45		1.36		6.01		2.09		0.93		0.32		0.77		40.10		0.02
Coefficient of Variation (CV)		0.30		1.78		1.05		0.41		0.84		0.24		0.59		0.75		0.65		1.25
min (ug/L)		1.15		0.11		0.30		4.90		0.99		1.09		0.25		0.20		19.00		0.0030
max (ug/L)		5.1		5.21		9.2		33.3		14.947		8.2354		1.9		3.6		364.767		0.169
MEC, total (ug/L)		5.1		5.21		9.2		33.3		14.9		8.2		1.9		3.6		364.8		0.169

Table 2
Effluent Organic Data

Date		Acrolein		Acrylonitrile		Benzene		Bromoform		Carbon Tetrachloride		Chlorobenzene		Chlorodibromomethane		Chloroethane		2-Chloroethylvinyl Ether
		17		18		19		20		21		22		23		24		25
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/23/99	<	2	<	1.1	<	2	<	2	<	2	<	2	<	2	<	2	<	10
5/18/99		NR		NR	<	2	<	2	<	2	<	2	<	2	<	2		NR
7/13/99		NR		NR	<	2	<	2	<	2	<	2	<	2	<	2		NR
11/16/99		NR		NR	<	2	<	2	<	2	<	2	<	2	<	2	<	20
2/29/00		NR		NR	<	2	<	2	<	2	<	2	<	2	<	2		NR
6/13/00		NR		NR	<	2	<	2	<	2	<	2	<	2	<	2		NR
9/13/00	<	50	<	50	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5		0.6		NR
11/14/00	<	100	<	100	<	1	<	1	<	1	<	1	<	1	<	1		NR
2/13/01	<	250	<	250	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5		NR
6/5/01		NR		NR	<	2	<	2	<	2	<	2	<	2	<	2		NR
8/21/01	<	50	<	50	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5		NR
12/4/01	<	50	<	50	<	0.5		0.7	<	0.5	<	0.5		1.2	<	0.5		NR
Average (ug/L)		83.67		83.52		1.58		1.60		1.58		1.58		1.64		1.59		15.00
SD		87.18		87.35		0.73		0.71		0.73		0.73		0.66		0.72		7.07
coef var		1.04		1.05		0.46		0.44		0.46		0.46		0.40		0.45		0.47
min (ug/L)	<	2	<	1.1		0.5	<	0.5		0.5		0.5		0.5	<	0.5	<	10
max (ug/L)	<	250	<	250	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5	<	20

Table 2
Effluent Organic Data

Date		Chloroform		Dichlorobromomethane		1,1-Dichloroethane		1,2-Dichloroethane		1,1-Dichloroethylene		1,2-Dichloropropane		1,3-Dichloropropylene		Ethylbenzene
		26		27		28		29		30		31		32		33
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/23/99		6.9	<	2	<	2	<	2	<	2	<	2	<	2		1.8
5/18/99		6.18		4.08	<	2	<	2	<	2	<	2	<	2	<	2
7/13/99		5.33	<	2	<	2	<	2	<	2	<	2	<	2	<	2
11/16/99		11.1	<	2	<	2	<	2	<	2	<	2	<	2	<	2
2/29/00		3.99	<	2	<	2	<	2	<	2	<	2	<	2	<	2
6/13/00		5.83	<	2	<	2	<	2	<	2	<	2	<	2	<	2
9/13/00		12		1.4	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5
11/14/00		15		2.3	<	1	<	1	<	1	<	1	<	1	<	1
2/13/01		5	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5
6/5/01		12	<	2	<	2	<	2	<	2	<	2	<	5	<	2
8/21/01		9.3		1.2	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5
12/4/01		8.5		1.8	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5	<	0.5
Average (ug/L)		8.43		2.11		1.58		1.58		1.58		1.58		1.83		1.57
SD		3.46		0.71		0.73		0.73		0.73		0.73		1.23		0.73
coef var		0.41		0.34		0.46		0.46		0.46		0.46		0.67		0.46
min (ug/L)		3.99	<	1.2	<	0.5		0.5	<	0.5	<	0.5	<	0.5	<	0.5
max (ug/L)		15		4.08	<	2.5	<	2.5	<	2.5	<	2.5	<	5	<	2.5

Table 2
Effluent Organic Data

Date		Methyl Bromide		Methyl Chloride		Methylene Chloride		1,1,2,2-Tetrachloroethane		Tetrachloroethylene		Toluene		1,2-Trans-Dichloroethylene		1,1,1-Trichloroethane		1,1,2-Trichloroethane
		34		35		36		37		38		39		40		41		42
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/23/99	<	2	<	2		3.8	<	2		3.6	<	2	<	2	<	2	<	2
5/18/99	<	2	<	2		2.29	<	2	<	2	<	2	<	2	<	2	<	2
7/13/99	<	2	<	2	<	2	<	2	<	2	<	2	<	2	<	2	<	2
11/16/99	<	2	<	2	<	2	<	2	<	2	<	2	<	2	<	2	<	2
2/29/00	<	2	<	2	<	2	<	2	<	2	<	2	<	2	<	2	<	2
6/13/00	<	2	<	2	<	2	<	2	<	2	<	2	<	2	<	2	<	2
9/13/00	<	0.5		1.3	<	3	<	0.5		0.8	<	0.5	<	0.5	<	0.5	<	0.5
11/14/00	<	1	<	1	<	6	<	1		2.5	<	0.5	<	0.5	<	0.5	<	0.5
2/13/01	<	2.5	<	2.5	<	15	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5	<	2.5
6/5/01	<	5	<	2	<	10	<	2		2	<	2	<	2	<	2	<	2
8/21/01	<	0.5		1.1	<	3	<	0.5		0.7	<	0.5	<	0.5	<	0.5	<	0.5
12/4/01	<	0.5	<	0.5	<	3	<	0.5		3.3	<	0.5	<	0.5	<	0.5	<	0.5
Average (ug/L)		1.83		1.70		4.51		1.58		2.12		1.54		1.54		1.54		1.54
SD		1.23		0.58		4.04		0.73		0.84		0.78		0.78		0.78		0.78
coef var		0.67		0.34		0.90		0.46		0.40		0.51		0.51		0.51		0.51
min (ug/L)	<	0.5	<	0.5		2	<	0.5		0.7	<	0.5	<	0.5		0.5	<	0.5
max (ug/L)	<	5	<	2.5	<	15	<	2.5		3.6	<	2.5	<	2.5	<	2.5	<	2.5

Table 2
Effluent Organic Data

Date		Trichloroethylene		Vinyl Chloride		2-Chlorophenol		2,4-Dichlorophenol		2,4-Dimethylphenol		2-Methyl- 4,6-Dinitrophenol		2,4-Dinitrophenol		2-Nitrophenol
		43		44		45		46		47		48		49		50
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/23/99	<	2	<	2	<	2.8	<	3.31	<	2.93	<	0.41	<	0.73	<	2.56
5/18/99	<	2	<	2	<	2.8	<	3.31	<	2.93	<	0.41	<	0.73	<	2.56
7/13/99	<	2	<	2	<	2.8	<	3.31	<	2.93	<	0.41	<	0.73	<	2.56
11/16/99	<	2	<	2	<	2.8	<	3.31	<	2.93	<	0.41	<	0.73	<	2.56
2/29/00	<	2	<	2	<	2.8	<	3.31	<	2.93	<	0.41	<	0.73	<	2.56
6/13/00	<	2	<	2	<	2.8	<	3.31	<	2.93	<	0.41	<	0.73	<	2.56
9/13/00	<	0.5	<	0.5	<	0.92	<	0.77	<	2.98	<	0.64	<	0.4	<	0.54
11/14/00	<	0.5	<	0.5	<	0.92	<	0.77	<	2.98	<	0.64	<	0.4	<	0.54
2/13/01	<	2.5	<	2.5	<	0.92	<	0.77	<	2.98	<	0.64	<	0.4	<	0.54
6/5/01	<	2	<	2	<	7.1	<	7.1	<	7.1	<	14	<	14	<	7.1
8/21/01	<	0.5	<	0.5	<	0.92	<	0.77	<	2.98	<	0.64	<	0.4	<	0.54
12/4/01	<	0.5	<	0.5	<	5	<	5	<	5	<	50	<	50	<	5
Average (ug/L)		1.54		1.54		2.72		2.92		3.47		5.75		5.83		2.47
SD		0.78		0.78		1.84		1.94		1.29		14.47		14.43		1.97
coef var		0.51		0.51		0.68		0.66		0.37		2.51		2.48		0.80
min (ug/L)		0.5	<	0.5	<	0.92	<	0.77	<	2.93	<	0.41	<	0.4	<	0.54
max (ug/L)	<	2.5	<	2.5	<	7.1	<	7.1	<	7.1	<	50	<	50	<	7.1

Table 2
Effluent Organic Data

Date		4-Nitrophenol		3-methyl 4-chlorophenol		Pentachlorophenol		Phenol		2,4,6-Trichlorophenol		Benzidine		Bis(2-Chloroethoxy)Methane		Bis(2-Chloroethyl)Ether
		51		52		53		54		55		59		65		66
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/23/99	<	0.6	<	2.95	<	0.59	<	0.88	<	3.38	<	2.44	<	3.4	<	4.09
5/18/99	<	0.6	<	2.95	<	0.59	<	0.88	<	3.38	<	2.44	<	3.4	<	4.09
7/13/99	<	0.6	<	2.95	<	0.59	<	0.88	<	3.38	<	2.44	<	3.4	<	4.09
11/16/99	<	0.6	<	2.95	<	0.59	<	0.88	<	3.38	<	2.44	<	3.4	<	4.09
2/29/00	<	0.6	<	2.95	<	0.59	<	0.88	<	3.38	<	2.44	<	3.4	<	4.09
6/13/00	<	0.6	<	2.95	<	0.59	<	0.88	<	3.38	<	2.44	<	3.4	<	4.09
9/13/00	<	0.21	<	1.77	<	0.7	<	0.5	<	0.69	<	1.12	<	1.01	<	0.91
11/14/00	<	0.21	<	1.77	<	0.7	<	0.5	<	0.69	<	1.12	<	1.01	<	0.91
2/13/01	<	0.21	<	1.77	<	0.7	<	0.5	<	0.69	<	0.05	<	1.01	<	0.91
6/5/01	<	14	<	7.1	<	14	<	7.1	<	7.1		NR	<	7.1	<	7.1
8/21/01	<	0.21	<	1.77	<	0.7	<	0.5	<	0.69	<	0.05	<	1.01	<	0.91
12/4/01	<	10	<	5	<	20	<	5	<	5	<	50	<	10	<	10
Average (ug/L)		2.37		3.07		3.36		1.62		2.93		6.09		3.46		3.77
SD		4.58		1.56		6.50		2.13		1.98		14.60		2.70		2.75
coef var		1.93		0.51		1.93		1.32		0.67		2.40		0.78		0.73
min (ug/L)	<	0.21	<	1.77	<	0.59	<	0.5	<	0.69	<	0.05	<	1.01	<	0.91
max (ug/L)	<	14	<	7.1	<	20	<	7.1	<	7.1	<	50	<	10	<	10

Table 2
Effluent Organic Data

Date		Bis(2-Chloroisopropyl)Ether		Bis(2-Ethylhexyl)Phthalate		4-Bromophenyl Phenyl Ether		Butylbenzyl Phthalate		2-Chloronaphthalene		4-Chlorophenyl Phenyl Ether
		67		68		69		70		71		72
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/23/99	<	4.21	<	1.19	<	1.42	<	0.97	<	2.85	<	1.87
5/18/99	<	4.21	<	1.19	<	1.42	<	0.97	<	2.85	<	1.87
7/13/99	<	4.21	<	1.19	<	1.42	<	0.97	<	2.85	<	1.87
11/16/99	<	4.21	<	1.19	<	1.42	<	0.97	<	2.85	<	1.87
2/29/00	<	4.21		1.3	<	1.42	<	0.97	<	2.85	<	1.87
6/13/00	<	4.21	<	1.19	<	1.42	<	0.97	<	2.85	<	1.87
9/13/00	<	0.85		7.92	<	1.03	<	0.62		NR	<	1.11
11/14/00	<	0.85	<	0.97	<	1.03	<	0.62		NR	<	1.11
2/13/01	<	0.85		2.66	<	1.03	<	0.62		NR	<	1.11
6/5/01	<	7.1	<	14	<	7.1	<	7.1	<	7.1	<	7.1
8/21/01	<	0.85	<	0.97	<	1.03	<	0.62		NR	<	1.11
12/4/01	<	10	<	4	<	5	<	5	<	5	<	5
Average (ug/L)		3.81		3.15		2.06		1.70		3.65		2.31
SD		2.78		3.97		1.92		2.09		1.58		1.84
coef var		0.73		1.26		0.93		1.23		0.43		0.79
min (ug/L)	<	0.85	<	0.97	<	1.03	<	0.62	<	2.85	<	1.11
max (ug/L)	<	10	<	14	<	7.1	<	7.1	<	7.1	<	7.1

Table 2
Effluent Organic Data

Date		1,2-Dichlorobenzene		1,3-Dichlorobenzene		1,4-Dichlorobenzene		3,3 Dichlorobenzidine		Diethyl Phthalate		Dimethyl Phthalate		Di-n-Butyl Phthalate
		75		76		77		78		79		80		81
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/23/99	<	2.36	<	2.09	<	2.19	<	1.32	<	0.93	<	1.96	<	0.7
5/18/99	<	2.36	<	2.09	<	2.19	<	1.32	<	0.93	<	1.96	<	0.7
7/13/99	<	2.36	<	2.09	<	2.19	<	1.32	<	0.93	<	1.96	<	0.7
11/16/99	<	2.36	<	2.09	<	2.19	<	1.32	<	0.93	<	1.96	<	0.7
2/29/00	<	2.36	<	2.09	<	2.19	<	1.32	<	0.93	<	1.96	<	0.7
6/13/00	<	2.36	<	2.09	<	2.19	<	1.32	<	0.93	<	1.96	<	0.7
9/13/00		1.2	<	0.5		0.8	<	2.77	<	0.32	<	0.35	<	0.96
11/14/00	<	1	<	1		1	<	2.77	<	0.32	<	0.35	<	0.96
2/13/01	<	0.85	<	0.74	<	0.81	<	2.77	<	0.32	<	0.35	<	0.96
6/5/01	<	7.1	<	7.1	<	7.1	<	14	<	7.1	<	7.1	<	14
8/21/01	<	0.85	<	0.74	<	0.81	<	2.77	<	0.32	<	0.35	<	0.96
12/4/01	<	5	<	5	<	5	<	50	<	5	<	5	<	10
Average (ug/L)		2.51		2.30		2.39		6.92		1.58		2.11		2.67
SD		1.83		1.92		1.88		14.02		2.15		2.04		4.44
coef var		0.73		0.83		0.79		2.03		1.36		0.97		1.66
min (ug/L)		0.85		0.5		0.8	<	1.32	<	0.32	<	0.35	<	0.7
max (ug/L)	<	7.1	<	7.1	<	7.1	<	50	<	7.1	<	7.1	<	14

Table 2
Effluent Organic Data

Date		2,4-Dinitrotoluene		2,6-Dinitrotoluene		Di-n-Octyl Phthalate		1,2-Diphenylhydrazine		Hexachlorobenzene		Hexachlorobutadiene		Hexachlorocyclopentadiene
		82		83		84		85		88		89		90
		ug/L		ug/L		ug/L		ug/l		ug/L		ug/L		ug/L
2/23/99	<	1.01	<	1.92	<	0.9		unstable	<	1.63	<	2.12	<	0.9
5/18/99	<	1.01	<	1.92	<	0.9		unstable	<	1.63	<	2.12	<	0.9
7/13/99	<	1.01	<	1.92	<	0.9		unstable	<	1.63	<	2.12	<	0.9
11/16/99	<	1.01	<	1.92	<	0.9		unstable	<	1.63	<	2.12	<	0.9
2/29/00	<	1.01	<	1.92	<	0.9		unstable	<	1.63	<	2.12	<	0.9
6/13/00	<	1.01	<	1.92	<	0.9		unstable	<	1.63	<	2.12	<	0.9
9/13/00	<	0.96	<	1.18	<	1.34		unstable	<	1	<	0.55	<	0.33
11/14/00	<	0.96	<	1.18	<	1.34		unstable	<	1	<	0.55	<	0.33
2/13/01	<	0.96	<	1.18	<	1.34		unstable	<	0.04	<	0.55	<	0.33
6/5/01	<	7.1	<	7.1	<	7.1		unstable	<	7.1	<	7.1	<	14
8/21/01	<	0.96	<	1.18	<	1.34		unstable	<	0.04	<	0.55	<	0.33
12/4/01	<	5	<	5	<	10	<	10	<	5	<	10	<	10
Average (ug/L)		1.83		2.36		2.32		10.00		2.00		2.67		2.56
SD		2.02		1.81		2.98		#DIV/0!		2.03		2.91		4.50
coef var		1.10		0.77		1.28		#DIV/0!		1.02		1.09		1.76
min (ug/L)	<	0.96	<	1.18	<	0.9	<	10	<	0.04	<	0.55	<	0.33
max (ug/L)	<	7.1	<	7.1	<	10	<	10	<	7.1	<	10	<	14

Table 2
Effluent Organic Data

Date		Hexachloroethane		Isophorone		Nitrobenzene		N-Nitrosodimethylamine		N-Nitrosodi-n-Propylamine		N-Nitrosodiphenylamine		1,2,4-Trichlorobenzene
		91		93		95		96		97		98		101
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/23/99	<	2.01	<	3.39	<	2.89		unstable	<	3.3		unstable	<	2.54
5/18/99	<	2.01	<	3.39	<	2.89		unstable	<	3.3		unstable	<	2.54
7/13/99	<	2.01	<	3.39	<	2.89		unstable	<	3.3		unstable	<	2.54
11/16/99	<	2.01	<	3.39	<	2.89		unstable	<	3.3		unstable	<	2.54
2/29/00	<	2.01	<	3.39	<	2.89		unstable	<	3.3		unstable	<	2.54
6/13/00	<	2.01	<	3.39	<	2.89		unstable	<	3.3		unstable	<	2.54
9/13/00	<	0.59	<	0.91	<	0.91		unstable	<	0.94		unstable		NR
11/14/00	<	0.59	<	0.91	<	0.91		unstable	<	0.94		unstable	<	1.26
2/13/01	<	0.59	<	0.91	<	0.91		unstable	<	0.94		unstable	<	1.26
6/5/01	<	7.1	<	7.1	<	7.1	<	7.1	<	7.1	<	7.1	<	7.1
8/21/01	<	0.59	<	0.91	<	0.91		unstable	<	0.94		unstable	<	1.26
12/4/01	<	5	<	5	<	5	<	5	<	5	<	5	<	5
Average (ug/L)		2.21		3.01		2.76		6.05		2.97		6.05		2.83
SD		1.96		1.89		1.85		1.48		1.87		1.48		1.76
coef var		0.89		0.63		0.67		0.25		0.63		0.25		0.62
min (ug/L)	<	0.59	<	0.91	<	0.91	<	5	<	0.94	<	5		1.26
max (ug/L)	<	7.1	<	7.1	<	7.1	<	7.1	<	7.1	<	7.1	<	7.1

Table 2
Effluent Organic Data

Date		Aldrin		alpha-BHC		beta-BHC		gamma-BHC		delta-BHC		Chlordane		4,4'-DDT		4,4'-DDE		4,4'-DDD
		102		103		104		105		106		107		108		109		110
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/9/99	<	0.0022	<	0.0016	<	0.0016	<	0.0014	<	0.001	<	0.0034	<	0.0033	<	0.0018	<	0.003
4/18/99	<	0.0022	<	0.0016	<	0.0016	<	0.0014	<	0.001	<	0.0034	<	0.0033	<	0.0018	<	0.003
8/12/99	<	0.0022	<	0.0016	<	0.0016	<	0.0014	<	0.001	<	0.0034	<	0.0033	<	0.0018	<	0.003
11/29/99	<	0.0022	<	0.0016	<	0.0016	<	0.0014	<	0.001	<	0.0034	<	0.0033	<	0.0018	<	0.003
3/20/00	<	0.0022	<	0.0016	<	0.0016	<	0.0014	<	0.001	<	0.0034	<	0.0033	<	0.0018	<	0.005
6/7/00	<	0.0022	<	0.0016	<	0.0016	<	0.0014	<	0.001	<	0.0034	<	0.0033	<	0.0018	<	0.005
9/13/00	<	0.0022	<	0.0016	<	0.0016	<	0.0014	<	0.001	<	0.0034	<	0.0033	<	0.0018	<	0.005
11/15/00	<	0.002	<	0.0016	<	0.0016	<	0.0014	<	0.001	<	0.0034	<	0.0033	<	0.0018	<	0.005
3/2/01	<	0.002	<	0.0011	<	0.0034	<	0.0011	<	0.0016	<	0.0034	<	0.0059	<	0.0041	<	0.0056
5/20/01	<	0.002	<	0.0011	<	0.0034	<	0.0011	<	0.0016	<	0.0034	<	0.0059	<	0.0041	<	0.0056
8/21/01	<	0.002	<	0.0011	<	0.0034	<	0.0011	<	0.0016	<	0.0034	<	0.0059	<	0.0041	<	0.0056
11/15/01	<	0.002	<	0.0011	<	0.0034	<	0.0011	<	0.0016	<	0.0034	<	0.0059	<	0.0041	<	0.0056
Average (ug/L)		0.0021		0.0014		0.0022		0.0013		0.0012		0.0034		0.0042		0.0026		0.0045
SD		0.0001		0.0002		0.0009		0.0001		0.0003		0.0000		0.0013		0.0011		0.0012
coef var		0.0487		0.1718		0.4028		0.1136		0.2462		0.0000		0.3072		0.4412		0.2561
min (ug/L)	<	0.0020	<	0.0011	<	0.0016	<	0.0011	<	0.0010	<	0.0034	<	0.0033	<	0.0018	<	0.0030
max (ug/L)	<	0.0022	<	0.0016	<	0.0034	<	0.0014	<	0.0016	<	0.0034	<	0.0059	<	0.0041	<	0.0056

Table 2
Effluent Organic Data

Date		Dieldrin		alpha-Endosulfan		beta-Endosulfan		Endosulfan Sulfate		Endrin		Endrin Aldehyde		Heptachlor		Heptachlor Epoxide		Aroclor 1016
		111		112		113		114		115		116		117		118		119
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/9/99	<	0.0024	<	0.0026	<	0.0018	<	0.0022	<	0.0021	<	0.0024	<	0.0012	<	0.0019	<	0.012
4/18/99	<	0.0024	<	0.0026	<	0.0018	<	0.0022	<	0.0021	<	0.0024	<	0.0012	<	0.0019	<	0.012
8/12/99	<	0.0024	<	0.0026	<	0.0018	<	0.0022	<	0.0021	<	0.0024	<	0.0012	<	0.0019	<	0.012
11/29/99	<	0.0024	<	0.0026	<	0.0018	<	0.0022	<	0.0021	<	0.0024	<	0.0012	<	0.0019	<	0.012
3/20/00	<	0.0024	<	0.0026	<	0.0018	<	0.0022	<	0.002	<	0.0024	<	0.0012	<	0.0019	<	0.012
6/7/00	<	0.0024	<	0.0026	<	0.0018	<	0.0022	<	0.002	<	0.0024	<	0.0012	<	0.0019	<	0.012
9/13/00	<	0.0024	<	0.0026	<	0.0018	<	0.0022	<	0.002	<	0.0024	<	0.0012	<	0.0019	<	0.012
11/15/00	<	0.0024	<	0.0026	<	0.0018	<	0.0022	<	0.002	<	0.0024	<	0.0012	<	0.0019	<	0.012
3/2/01	<	0.0019	<	0.0028	<	0.0023	<	0.0059	<	0.0021	<	0.0069	<	0.001	<	0.0012	<	0.012
5/20/01	<	0.0019	<	0.0028	<	0.0023	<	0.0059	<	0.0021	<	0.0069	<	0.001	<	0.0012	<	0.012
8/21/01	<	0.0019	<	0.0028	<	0.0023	<	0.0059	<	0.0021	<	0.0069	<	0.001	<	0.0012	<	0.012
11/15/01	<	0.0019	<	0.0028	<	0.0023	<	0.0059	<	0.0021	<	0.0069	<	0.001	<	0.0012	<	0.012
Average (ug/L)		0.0022		0.0027		0.0020		0.0034		0.0021		0.0039		0.0011		0.0017		0.0120
SD		0.0002		0.0001		0.0002		0.0018		0.0000		0.0022		0.0001		0.0003		0.0000
coef var		0.1102		0.0369		0.1252		0.5306		0.0238		0.5681		0.0869		0.2068		0.000
min (ug/L)	<	0.0019	<	0.0026	<	0.0018	<	0.0022	<	0.0020	<	0.0024	<	0.0010	<	0.0012	<	0.0120
max (ug/L)	<	0.0024	<	0.0028	<	0.0023	<	0.0059	<	0.0021	<	0.0069	<	0.0012	<	0.0019	<	0.012

Table 2
Effluent Organic Data

Date		Aroclor 1242		Aroclor 1254		Aroclor 1221		Aroclor 1232		Aroclor 1248		Aroclor 1260		Toxaphene		Tributyltin
		120		121		122		123		124		125		126		127
		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L
2/9/99	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		
4/18/99	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		
8/12/99	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		
11/29/99	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		
3/20/00	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		
6/7/00	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		
9/13/00	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035	<	0.03
11/15/00	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035	<	0.035
3/2/01	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		
5/20/01	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		0.0097
8/21/01	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		0.02
11/15/01	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035		
Average (ug/L)		0.0100		0.0140		0.0160		0.0160		0.0160		0.0160		0.0350		0.0237
SD		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0112
coef var		0.00		0.000		0.000		0.000		0.000		0.000		0.000		0.474
min (ug/L)	<	0.0100	<	0.0140	<	0.0160	<	0.0160	<	0.0160	<	0.0160	<	0.0350		0.0097
max (ug/L)	<	0.01	<	0.014	<	0.016	<	0.016	<	0.016	<	0.016	<	0.035	<	0.035

Table 3
Effluent PAH Data

Date		Acenaphthene 56 ug/L		Acenaphthylene 57 ug/L		Anthracene 58 ug/L		Benzo(a)Anthracene 60 ug/L		Benzo(a)Pyrene 61 ug/L		Benzo(b)Fluoranthene 62 ug/L		Benzo(ghi)Perylene 63 ug/L		Benzo(k)Fluoranthene 64 ug/L
3/3/98	<	0.6	<	1.1	<	1.0	<	2.6	<	3.0	<	2.5	<	2.2	<	4.3
6/11/98	<	0.6	<	1.1	<	1.0	<	2.6	<	3.0	<	2.5	<	2.2	<	4.3
8/25/98	<	0.6	<	1.1	<	1.0	<	2.6	<	3.0	<	2.5	<	2.2	<	4.3
10/20/98	<	0.6	<	1.1	<	1.0	<	2.6	<	3.0	<	2.5	<	2.2	<	4.3
2/23/99	<	2.44	<	2.24	<	0.96	<	0.84	<	1.21	<	7.51	<	2.30	<	9.74
5/18/99	<	2.44	<	2.24	<	0.96	<	0.84	<	1.21	<	7.51	<	2.30	<	9.74
7/13/99	<	2.44	<	2.24	<	0.96	<	0.84	<	1.21	<	7.51	<	2.30	<	9.74
11/16/99	<	2.44	<	2.24	<	0.96	<	0.84	<	1.21	<	7.51	<	2.30	<	9.74
2/29/00	<	2.44	<	2.24	<	0.96	<	0.84	<	1.21	<	7.51	<	2.30	<	9.74
6/13/00	<	2.44	<	2.24	<	0.96	<	0.84	<	1.21	<	7.51	<	2.30	<	9.74
9/13/00	<	1.12	<	1.17	<	1.09	<	1.01	<	1.40	<	1.65	<	1.65	<	1.14
11/14/00	<	1.12	<	1.17	<	1.09	<	1.01	<	1.40	<	1.65	<	1.65	<	1.14

avg (ug/L)		0.02		0.03		0.002		0.003		0.004		0.004		0.01		0.021
SD		0.02		0.003		0.0001		0.0003		0.0004		0.0004		0.001		0.002
coef var		0.72		0.10		0.06		0.10		0.10		0.10		0.10		0.10
min (ug/L)		0	<	0	<	0	<	0	<	0	<	0	<	0	<	0
max (ug/L)		0	<	0	<	0	<	0	<	0	<	0	<	0	<	0
MEC, total (ug/L)		0.246	<	0.06	<	0.00	<	0.006	<	0.0079	<	0.0079	<	0.01	<	0.041

Table 3
Effluent PAH Data

Date		Chrysene 73 ug/L		Dibenzo(a,h)Anthracene 74 ug/L		Fluoranthene 86 ug/L		Fluorene 87 ug/L		Indeno(1,2,3-cd)Pyrene 92 ug/L		Naphthalene 94 ug/L		Phenanthrene 99 ug/L		Pyrene 100 ug/L
3/3/98	<	2.6	<	2.3	<	1.2	<	1.0	<	2.4	<	0.001	<	1.0	<	1.8
6/11/98	<	2.6	<	2.3	<	1.2	<	1.0	<	2.4	<	1.4	<	1.0	<	1.8
8/25/98	<	2.6	<	2.3	<	1.2	<	1.0	<	2.4	<	1.4	<	1.0	<	1.8
10/20/98	<	2.6	<	2.3	<	1.2	<	1.0	<	2.4	<	1.4	<	1.0	<	1.8
2/23/99	<	1.02	<	2.31	<	0.86	<	2.00	<	2.34	<	2.49	<	1.22	<	0.87
5/18/99	<	1.02	<	2.31	<	0.86	<	2.00	<	2.34	<	2.49	<	1.22	<	0.87
7/13/99	<	1.02	<	2.31	<	0.86	<	2.00	<	2.34	<	2.49	<	1.22	<	0.87
11/16/99	<	1.02	<	2.31	<	0.86	<	2.00	<	2.34	<	2.49	<	1.22	<	0.87
2/29/00	<	1.02	<	2.31	<	0.86	<	2.00	<	2.34	<	2.49	<	1.22	<	0.87
6/13/00	<	1.02	<	2.31	<	0.86	<	2.00	<	2.34	<	2.49	<	1.22	<	0.87
9/13/00	<	1.01	<	1.41	<	1.04	<	1.21	<	1.35	<	0.93	<	1.12	<	0.87
11/14/00	<	1.01	<	1.41	<	1.04	<	1.21	<	1.35	<	0.93	<	1.12	<	0.87

avg (ug/L)		0.002		0.003		0.005		0.004		0.002		0.04		0.01		0.001
SD		0.0004		0.0003		0.004		0.0002		0.0002		0.12		0.04		0.0001
coef var		0.22		0.10		0.86		0.06		0.10		3.13		5.78		0.10
min (ug/L)		0	<	0	<	0	<	0	<	0		0		0	<	0
max (ug/L)		0	<	0	<	0	<	0	<	0		0		0	<	0
MEC, total (ug/L)		0.006	<	0.005	<	0.01	<	0.01	<	0.005		1.47		0.47	<	0.0027

TABLE 4
Effluent Cyanide Data

Date		Cyanide (mg/L)
2-Mar-98	<	10
10-Mar-98	<	10
18-Mar-98	<	10
10-Apr-98	<	10
18-Apr-98	<	10
19-Apr-98	<	10
1-May-98	<	10
20-May-98	<	10
25-May-98	<	10
2-Jun-98	<	10
10-Jun-98	<	10
18-Jun-98	<	10
25-Jun-98	<	10
3-Jul-98	<	10
11-Jul-98	<	10
12-Jul-98	<	10
20-Jul-98	<	10
1-Aug-98	<	10
2-Aug-98	<	10
10-Aug-98	<	10
18-Aug-98	<	10
25-Aug-98	<	10
2-Sep-98	<	10
10-Sep-98	<	10
18-Sep-98	<	10
25-Sep-98	<	10
3-Oct-98	<	10
4-Oct-98	<	10
12-Oct-98	<	10
20-Oct-98	<	10
25-Oct-98	<	10
2-Nov-98	<	10
18-Nov-98	<	10
25-Nov-98	<	10
11-Dec-98	<	10
19-Dec-98	<	10
20-Dec-98	<	10
1-Jan-99	<	10
9-Jan-99	<	10
10-Jan-99	<	10
25-Jan-99	<	10
1-Feb-99	<	10
5-Mar-99	<	10
13-Mar-99	<	10
1-Apr-99	<	10
14-Apr-99	<	10
23-Apr-99	<	10
1-May-99	<	10
2-May-99	<	10
10-May-99	<	10
18-May-99	<	10

TABLE 4
Effluent Cyanide Data

Date		Cyanide (mg/L)
26-May-99	<	10
3-Jun-99	<	10
11-Jun-99	<	10
19-Jun-99	<	10
20-Jun-99	<	10
1-Jul-99	<	10
5-Jul-99	<	10
13-Jul-99	<	10
25-Jul-99	<	10
21-Aug-99	<	10
23-Aug-99	<	10
1-Sep-99	<	10
7-Sep-99	<	10
5-Aug-99	<	10
13-Aug-99	<	10
16-Sep-99	<	10
2-Oct-99	<	10
3-Oct-99	<	10
24-Sep-99	<	10
11-Oct-99	<	10
19-Oct-99	<	10
24-Oct-99	<	10
2-Nov-99	<	10
11-Nov-99	<	10
21-Nov-99	<	10
11-Dec-99	<	10
13-Dec-99	<	10
21-Dec-99	<	10
4-Jan-00	<	10
11-Jan-00	<	10
19-Jan-00	<	10
26-Jan-00	<	10
1-Feb-00	<	10
9-Feb-00	<	10
28-Feb-00	<	10
6-Mar-00	<	10
14-Mar-00	<	10
20-Mar-00	<	10
28-Mar-00	<	10
3-Apr-00	<	10
10-Apr-00	<	10
25-Apr-00	<	10
1-May-00	<	10
16-May-00	<	10
20-May-00	<	10
29-May-00	<	10
3-Jun-00	<	10
13-Jun-00	<	10
20-Jun-00	<	10
27-Jun-00	<	10
5-Jul-00	<	10

TABLE 4
Effluent Cyanide Data

Date		Cyanide (mg/L)
9-Jul-00	<	10
19-Jul-00	<	10
26-Jul-00	<	10
1-Aug-00	<	10
7-Aug-00	<	10
13-Aug-00	<	10
23-Aug-00	<	10
28-Aug-00	<	10
4-Sep-00	<	10
12-Sep-00	<	10
17-Sep-00	<	10
18-Sep-00	<	10
3-Oct-00	<	10
4-Oct-00	<	10
8-Oct-00	<	10
9-Oct-00	<	10
16-Oct-00	<	10
25-Oct-00	<	10
30-Oct-00	<	10
6-Nov-00	<	10
16-Nov-00	<	10
17-Nov-00	<	10
29-Nov-00	<	10
2-Dec-00	<	10
4-Dec-00	<	10
11-Dec-00	<	10
19-Dec-00	<	10
26-Dec-00	<	10
Mean (ug/L)		10.00
Standard Deviation		0.00
Coefficient of Variation (CV)		0.00
min (ug/L)		10.00
max (ug/L)		10
MEC, total (ug/L)		NA (All none detect and detection limit is above objective

Table 5
Dioxin Data and RPA

	Names of Congeners																	TEQ including non-detect	TEQ excluding non-detect and estimated values
	2,3,7,8-TCDD	1,2,3,7,8-PeCDD	1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD	OCDD	2,3,7,8-TCDF	1,2,3,7,8-PeCDF	2,3,4,7,8-PeCDF	1,2,3,4,7,8-HxCDF	1,2,3,6,7,8-HxCDF	2,3,4,6,7,8-HxCDF	1,2,3,7,8,9-HxCDF	1,2,3,4,6,7,8-HpCDF	1,2,3,4,7,8,9-HpCDF	OCDF		
98 WHO TEFs	1	1.0	0.1	0.1	0.1	0.01	0.0001	0.1	0.05	0.5	0.1	0.1	0.1	0.1	0.01	0.01	0.0001		
8/5/95	1.2	0.83	2.7	2.5	2.4	4.9	31	1.2	1.3	1.4	2.4	2.2	2.2	2.4	1.7	2	2.2	4.7	0.0
12/05/95	3	5.5	2.6	2.4	2.7	8.3	83	1.9	1.9	1.8	1.7	1.4	5.7	1.2	1.5	1	3.4	11.6	0.0
06/12/97	4.8	7.1	5	5.4	5	10	39	2.5	7	7.1	1.6	1.8	6.3	0.91	2.2	2.6	5.3	18.8	0.0
07/05/97	1.4	1.2	1.4	1.5	1.4	5.2	32	0.85	1.3	1.5	0.86	0.9	3	0.89	0.85	0.61	3	4.6	0.0
07/14/97	3.1	4.4	3.2	3	2.8	5.6	35	3	4.3	4.6	1.8	1.7	3.4	1.4	2.8	1.1	6.2	12.1	0.0
10/09/97	2.9	3.8	3.9	3.8	3.7	4	26	2.8	4.7	5.2	0.94	1	2.7	0.97	1.7	1.7	29	11.6	0.0
09/18/98	3.4	5.4	3.4	3.3	3.2	3.8	18	1.6	3.2	3.1	1.9	2.3	2.4	2	1.2	1.5	5.4	12.6	0.0
01/05/99	2.2	1.3	3.5	3.2	3.2	4.1	28	1.3	1.3	1.5	1.4	1.5	1.5	1.6	2.70	2	4.4	6.1	0.0
09/22/99	2.2	4.3	3	3	2.9	11	93	1.5	2.2	2.3	1.9	2.1	1.4	1.7	3.6	4.5	9.2	9.7	0.0
03/13/00	2.2	4.3	3	3	2.9	11	66	1.5	2.2	2.3	1.9	2.1	1.4	1.7	3.6	4.5	9.2	9.7	0.0
08/24/00	1.3	2.3	1.6	1.6	1.4	5.7	40	0.89	1.1	1.1	1.4	1.3	1	0.88	2.8	2.2	7.2	5.3	0.0
11/15/00	3	3.8	2.7	2.7	2.5	4.2	20	4.5	3	3	1.9	1.8	1.5	1.8	2	2.8	3.8	10.5	0.0
4/20/01	4.6	11	9	9	7.9	15	83	4.5	6.6	6.5	7.1	7.3	6.5	5.1	6.1	8.5	12	25.1	0.0
5/20/01.	0.96	3.8	1.7	1.7	1.6	3.7	37	0.98	2	2.2	0.98	0.93	0.67	0.77	2.4	3.3	5.1	7.0	0.0
08/21/01	2.3	7.2	4.1	4	3.7	2.4	14	1.2	2.8	3	2.1	2	1.8	1.8	1.8	2.2	16	13.3	0.0
11/15/01	5.5	8.9	6.3	6.8	6.1	7.1	24	2.9	4.1	5.1	4.6	4.1	3.3	3.7	5.5	8.5	6.9	21.1	0.0
																Max.		25.1	0.0
																Min.		4.57	0.00
																WQO(a)		0.014	0.014
																RP?		CD	N
																Avg.		11.5	0.0
																STDV		5.9	0.0
																CV		0.52	#DIV/0!

All values in pg/L

Bold and shaded values are estimated values that are below the lowest calibration standard

Except the **Bold and shaded** values, all samples are non detect. Numbers shown are reporting limits

(a) Application of CTR criteria for 2,3,7,8-TCDD, TEQ for protection of Basin Plan narrative objective for bioaccumulative substance.

Table 6
Reasonable Potential Analysis

Beginning		Step 1								Step 2	Step 3			Step 4	Step 5	Step 6	Steps 7 & 8	Final Result [d]
		Criteria from the CTR and Basin Plan (total metals, µg/L) [a]							C (µg/L)		MinDL(µg/L)		MEC (µg/L)	MEC vs. C	B (µg/L)	B vs. C		
	Constituent name [i]	CTR: CMC	CTR: CCC	Human Health	1hr Avg	4day Avg	Inst. Max	24hr Avg	Lowest (most stringent) Criteria	Number of data points	Minimum Detection Limit	If all data points are ND and MinDL>C, interim monitoring is required	Maximum Pollutant Concentration from the effluent	1. If MEC> or =C, effluent limitation is required; 2. If MEC<C, go to Step 5	Maximum Ambient Background Concentration	If B>C, effluent limitation is required	7) Review other information in the SIP page 4. If information is unavailable or insufficient: 8) the RWQCB shall establish interim monitoring requirements. [h]	
1	Antimony			4300					4300	0		No data, to Step 5	No data	No data, go to Step 5	No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
2	Arsenic [b]				69.0	36.0			36	135			5.1	MEC<C, go to Step 5	2.46	B<C, go to Step 7		N
3	Beryllium								No criteria	0		No data, to Step 5	No data	No criteria	No RMP data, Step 7	No criteria	No criteria	No criteria
4	Cadmium [b]				43.0	9.3			9.3	135	0.2		5.21	MEC<C, go to Step 5	0.1268	B<C, go to Step 7		N
5a	Chromium (III)								No criteria	0		No data, to Step 5	No data	No criteria	4.4(total)	No criteria	No criteria	No criteria
5b	Chromium (VI)/Total Cr [b]				1100.0	50.0			50.0	135			9.2	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
6	**Copper (303d listed)** [c]	5.8	3.7		4.9				3.7	135			**33.3**	**Effluent Limit required**	2.45			Y
7	**Lead** [b]				140.0	5.6			5.6	135			**14.9**	**Effluent Limit required**	0.8	B<C, go to Step 7		Y
8	**Mercury (303d listed)** [b]				2.1	0.025			0.025	135			**0.169**	**Effluent Limit required**	0.0064			Y
9	**Nickel (303d listed)** [b]						140.0	7.1	7.1	135			**8.2**	**Effluent Limit required**	3.5			Y
10	**Selenium (303d listed)** [c]	5.0	5.0						5.0	135			1.9	MEC<C, go to Step 5	0.39	B<C, go to Step 7		N
11	Silver [b]						2.3		2.3	135			**3.6**	**Effluent Limit required**	0.068			Y
12	Thallium			6.3					6.3	0		No data, to Step 5	No data	No data, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		CD
13	Zinc [b]				170.0	58.0			58.0	135			**364.8**	**Effluent Limit required**	4.6			Y
14	Cyanide [b]	1	1	220000	5.0				1	135	10	MinDL>C, to Step 5	**10**	**Interim Monitoring is required**	No RMP data, Step 7			N
15	Asbestos								Not Appli.			Not Applicable	Not Applicable	Not Applicable		Not Applicable	Not Applicable	Not Applicable
16	**2,3,7,8 TCDD (303d listed)** (apply to Dioxin TEQ)			1.40E-08					1.40E-08	12		MinDL>C, to Step 5	3.17E-06 (see Table 6)	**Interim Monitoring is required**	No RMP data, Step 7	No ambient data, Step 7	Wet weather exceedance Detection in influent Presence in all POTWs	N
17	Acrolein			780					780	7	2.0	All data are ND	2.0	No data, go to Step 5	No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
18	Acrylonitrile			0.66					0.66	7	1.1	MinDL>C, to Step 5	1.1	**Interim Monitoring is required**	No RMP data, Step 7	No ambient data, Step 7		N
19	Benzene			71					71	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
20	Bromoform			360					360	12	0.7	All data are ND	0.7	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
21	Carbon Tetrachloride			4.4					4.4	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
22	Chlorobenzene			21000					21000	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
23	Chlorodibromomethane			34					34	12			1.2	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
24	Chloroethane								No criteria	12		No criteria	0.6	No criteria		No criteria	No criteria	No criteria
25	2-Chloroethylvinyl ether								No criteria	6	10	No criteria	10	No criteria		No criteria	No criteria	No criteria
26	Chloroform								No criteria	12		No criteria	15	No criteria		No criteria		No criteria
27	Dichlorobromomethane			46					46	12			4.08	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
28	1,1-Dichloroethane								No criteria	12	0.5	All data are ND	0.5	No criteria		No criteria	No criteria	No criteria
29	1,2-Dichloroethane			99					99	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
30	1,1-Dichloroethylene			3.2					3.2	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
31	1,2-Dichloropropane			39					39	11	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
32	1,3-Dichloropropylene			1700					1700	11	0.5	All data are ND	0.5	MEC<C, go to Step 6	No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
33	Ethylbenzene			29000					29000	12			1.8	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
34	Methyl Bromide			4000					4000	12	0.5	All data are ND	0.5	No data, go to Step 5	No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
35	Methyl Chloride								No criteria	12			1.3	No criteria		No criteria	No criteria	No criteria
36	Methylene Chloride			16000					16000	12			3.8	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
37	1,1,2,2-Tetrachloroethane			11					11	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
38	Tetrachloroethylene			8.85					8.85	12			3.6	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
39	Toluene			200000					200000	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
40	1,2-Trans-Dichloroethylene			140000					140000	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
41	1,1,1-Trichloroethane								No criteria	12	0.5	All data are ND	0.5	No criteria		No criteria	No criteria	No criteria
42	1,1,2-Trichloroethane			42					42	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
43	Trichloroethylene			81					81	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
44	Vinyl Chloride			525					525	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
45	2-Chlorophenol			400					400	12	0.92	All data are ND	0.92	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
46	2,4-Dichlorophenol			790					790	12	0.77	All data are ND	0.77	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
47	2,4-Dimethylphenol			2300					2300	12	2.9	All data are ND	2.9	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
48	2-Methyl- 4,6-Dinitrophenol			765					765	12	0.41	All data are ND	0.41	No data, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
49	2,4-Dinitrophenol			14000					14000	12	0.4	All data are ND	0.4	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
50	2-Nitrophenol								No criteria	12	0.54	All data are ND	0.54	No criteria		No criteria	No criteria	No criteria

Table 6
Reasonable Potential Analysis

Beginning		Step 1								Step 2	Step 3			Step 4	Step 5	Step 6	Steps 7 & 8	Final Result [d]
		Criteria from the CTR and Basin Plan (total metals, µg/L) [a]							C (µg/L)		MinDL(µg/L)		MEC (µg/L)	MEC vs. C	B (µg/L)	B vs. C	7) Review other information in the SIP page 4. If information is unavailable or insufficient: 8) the RWQCB shall establish interim monitoring requirements. [h]	
	Constituent name [i]	CTR: CMC	CTR: CCC	Human Health	1hr Avg	4day Avg	Inst. Max	24hr Avg	Lowest (most stringent) Criteria	Number of data points	Minimum Detection Limit	If all data points are ND and MinDL>C, interim monitoring is required	Maximum Pollutant Concentration from the effluent	1. If MEC> or =C, effluent limitation is required; 2. If MEC<C, go to Step 5	Maximum Ambient Background Concentration	If B>C, effluent limitation is required		
51	4-Nitrophenol								No criteria	12	0.21	All data are ND	0.21	No criteria		No criteria	No criteria	No criteria
52	3-Methyl 4-Chlorophenol								No criteria	12	1.77	All data are ND	1.77	No criteria		No criteria	No criteria	No criteria
53	Pentachlorophenol	13	7.9	8.2					7.9	12	0.59	All data are ND	0.59	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
54	Phenol			4600000					4600000	12	0.5	All data are ND	0.5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
55	2,4,6-Trichlorophenol			6.5					6.5	12	0.69	All data are ND	0.69	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		DL
56	Acenaphthene			2700					2700	12	0.6	All data are ND	0.6	MEC<C, go to Step 5	0.0015	B<C, go to Step 7		N
57	Acenaphthylene								No criteria	12	1.1	All data are ND	1.1	No criteria	0.00053	No criteria	No criteria	No criteria
58	Anthracene			110000					110000	12	1.0	All data are ND	1.0	MEC<C, go to Step 5	0.0005	B<C, go to Step 7		N
59	Benzidine			0.00054					0.00054	12	0.05	MinDL>C, to Step 5	0.05		No RMP data, Step 7	No ambient data, Step 7		DL
60	Benzo(a)Anthracene			0.049					0.049	12	0.84	MinDL>C, to Step 5	0.84		0.0053	B<C, go to Step 7		DL
61	Benzo(a)Pyrene			0.049					0.049	12	1.20	MinDL>C, to Step 5	1.20		0.000287	B<C, go to Step 7		DL
62	Benzo(b)Fluoranthene			0.049					0.049	12	1.65	MinDL>C, to Step 5	1.65		0.0046	B<C, go to Step 7		DL
63	Benzo(ghi)Perylene								No criteria	12	1.65	No criteria	1.65	No criteria	0.0027	No criteria	No criteria	No criteria
64	Benzo(k)Fluoranthene			0.049					0.049	12	1.14	MinDL>C, to Step 5	1.14		0.0015	B<C, go to Step 7		DL
65	Bis(2-Chloroethoxy)Methane								No criteria	12	1.01	No criteria	1.01	No criteria	No RMP data, Step 7	No criteria	No criteria	No criteria
66	Bis(2-Chloroethyl)Ether			1.4					1.4	12	0.91	MinDL>C, to Step 5	0.91		No RMP data, Step 7	No ambient data, Step 7		DL
67	Bis(2-Chloroisopropyl)Ether			170000					170000	12	0.85	All data are ND	0.85	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
68	Bis(2-Ethylhexyl)Phthalate			5.9					5.9	12			7.9	**Effluent Limit required**	No RMP data, Step 7	No ambient data, Step 7		Y
69	4-Bromophenyl Phenyl Ether								No criteria	12	1.03	No criteria	1.03	No criteria	No RMP data, Step 7	No criteria	No criteria	No criteria
70	Butylbenzyl Phthalate			5200					5200	12	0.62	All data are ND	0.62	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
71	2-Chloronaphthalene			4300					4300	12	2.85	All data are ND	2.85	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
72	4-Chlorophenyl Phenyl Ether								No criteria	10	1.1	No criteria	1.1	No criteria	No RMP data, Step 7	No criteria	No criteria	No criteria
73	Chrysene			0.049					0.049	12	1.01	MinDL>C, to Step 5	1.01		0.0024	B<C, go to Step 7		DL
74	Dibenzo(a,h)Anthracene			0.049					0.049	12	1.41	MinDL>C, to Step 5	1.41		0.00064	B<C, go to Step 7		DL
75	1,2-Dichlorobenzene			17000					17000	12			1.20	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
76	1,3-Dichlorobenzene			2600					2600	12	0.7	All data are ND	0.74	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
77	1,4-Dichlorobenzene			2600					2600	12			1	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
78	3,3 Dichlorobenzidine			0.077					0.077	12	1.32	MinDL>C, to Step 5	1.32		No RMP data, Step 7	No ambient data, Step 7		DL
79	Diethyl Phthalate			120000					120000	12	0.32	All data are ND	0.32	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
80	Dimethyl Phthalate			2900000					2900000	12	0.35	All data are ND	0.35	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
81	Di-n-Butyl Phthalate			12000					12000	12	0.7	All data are ND	0.7	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
82	2,4-Dinitrotoluene			9.1					9.1	12	0.96	All data are ND	0.96	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
83	2,6-Dinitrotoluene								No criteria	12	1.18	No criteria	1.18	No criteria	No RMP data, Step 7	No criteria	No criteria	No criteria
84	Di-n-Octyl Phthalate								No criteria	12	0.9	No criteria	0.9	No criteria	No RMP data, Step 7	No criteria	No criteria	No criteria
85	1,2-Diphenylhydrazine			0.54					0.54	3	10	MinDL>C, to Step 5	10		No RMP data, Step 7	No ambient data, go to St	Eff & Amb Monitoring	CD
86	Fluoranthene			370					370	12	0.086	All data are ND	0.086	MEC<C, go to Step 5	0.007	B<C, go to Step 7		N
87	Fluorene			14000					14000	12	1.0	All data are ND	1.0	MEC<C, go to Step 5	0.002078	B<C, go to Step 7		N
88	Hexachlorobenzene			0.00077					0.00077	16	0.04	MinDL>C, to Step 5	0.04		0.00002	B<C, go to Step 7		DL
89	Hexachlorobutadiene			50					50	12	0.55	All data are ND	0.55	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
90	Hexachlorocyclopentadiene			17000					17000	12	0.33	All data are ND	0.33	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
91	Hexachloroethane			8.9					8.9	12	0.59	All data are ND	0.59	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
92	Indeno(1,2,3-cd)Pyrene			0.049					0.049	12	1.35	MinDL>C, to Step 5	1.35		0.004	B<C, go to Step 7		DL
93	Isophorone			600					600	12	0.91	All data are ND	0.91	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
94	Naphthalene								No criteria	12	0.001	No criteria	0.001	No criteria	0.00229	No criteria	No criteria	No criteria
95	Nitrobenzene			1900					1900	12	0.91	All data are ND	0.91	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
96	N-Nitrosodimethylamine			8.1					8.1	4	5	All data are ND	5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
97	N-Nitrosodi-n-Propylamine			1.4					1.4	12	0.94	MinDL>C, to Step 5	0.94		No RMP data, Step 7	No ambient data, Step 7		DL
98	N-Nitrosodiphenylamine			16					16	4	5	All data are ND	5	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
99	Phenanthrene								No criteria	12	1	No criteria	1	No criteria	0.0061	No criteria	No criteria	No criteria
100	Pyrene			11000					11000	12	0.87	All data are ND	0.87	MEC<C, go to Step 5	0.019	B<C, go to Step 7		N
101	1,2,4-Trichlorobenzene								No criteria	11	1.26	No criteria	1.26	No criteria	No RMP data, Step 7	No criteria	No criteria	No criteria
102	Aldrin	1.3		0.00014					0.00014	12	0.002	MinDL>C, to Step 5	0.002		No RMP data, Step 7	No ambient data, Step 7		DL
103	alpha-BHC			0.013					0.013	8	0.001	All data are ND	0.001	MEC<C, go to Step 5	0.000496	B<C, go to Step 7		DL
104	beta-BHC			0.046					0.046	8	0.0016	All data are ND	0.0016	MEC<C, go to Step 5	0.0004129	B<C, go to Step 7		DL
105	gamma-BHC	0.16		0.0630					0.063	8	0.0011	All data are ND	0.0011	MEC<C, go to Step 5	0.0007034	B<C, go to Step 7		DL
106	delta-BHC								No criteria	8	0.001	No criteria	0.001	No criteria	0.000053	No criteria	No criteria	No criteria

Table 6
Reasonable Potential Analysis

Beginning		Step 1								Step 2	Step 3			Step 4	Step 5	Step 6	Steps 7 & 8	Final Result [d]
		Criteria from the CTR and Basin Plan (total metals, µg/L) [c]							C (µg/L)		MinDL(µg/L)		MEC (µg/L)	MEC vs. C	B (µg/L)	B vs. C	7) Review other information in the SIP page 4. If information is unavailable or insufficient: 8) the RWQCB shall establish interim monitoring requirements. [h]	
	Constituent name [i]	CTR: CMC	CTR: CCC	Human Health	1hr Avg	4day Avg	Inst. Max	24hr Avg	Lowest (most stringent) Criteria	Number of data points	Minimum Detection Limit	If all data points are ND and MinDL>C, interim monitoring is required	Maximum Pollutant Concentration from the effluent	1. If MEC> or =C, effluent limitation is required; 2. If MEC<C, go to Step 5	Maximum Ambient Background Concentration	If B>C, effluent limitation is required		
107	**Chlordane (303d listed)**	0.09	0.004	0.00059					0.00059	12	0.0034	MinDL>C, to Step 5	0.0034		0.00018	B<C, go to Step 7	**303d listed in fish tissue**	DL
108	**4,4'-DDT (303d listed)**	0.13	0.001	0.00059					0.00059	6	0.0033	MinDL>C, to Step 5	0.0033		0.00017	B<C, go to Step 7		DL
109	**4,4'-DDE (linked to DDT)**			0.00059					0.00059	8	0.0018	MinDL>C, to Step 5	0.0018		0.00069	**Effluent Limit required**		Y(B)
110	4,4'-DDD			0.00084					0.00084	8	0.003	MinDL>C, to Step 5	0.003		0.000313	B<C, go to Step 7		DL
111	**Dieldrin (303d listed)**	0.71	0.0019	0.00014					0.00014	12	0.0019	MinDL>C, to Step 5	0.0019		0.000264	**Effluent Limit required**		Y(B)
112	alpha-Endosulfan	0.034	0.0087	240					0.0087	8	0.0026	All data are ND	0.0026	MEC<C, go to Step 5	0.000031	B<C, go to Step 7		DL
113	beta-Endolsulfan	0.034	0.0087	240					0.0087	8	0.0018	All data are ND	0.0018	MEC<C, go to Step 5	0.000069	B<C, go to Step 7		DL
114	Endosulfan Sulfate			240					240	8	0.0022	All data are ND	0.0022	MEC<C, go to Step 5	0.000011	B<C, go to Step 7		N
115	Endrin	0.037	0.0023	0.81					0.0023	12	0.002	All data are ND	0.002	MEC<C, go to Step 5	0.000016	B<C, go to Step 7		DL
116	Endrin Aldehyde			0.81					0.81	8	0.0024	All data are ND	0.0024	MEC<C, go to Step 5	No RMP data, Step 7	No ambient data, Step 7		N
117	Heptachlor	0.053	0.0036	0.00021					0.00021	12	0.001	MinDL>C, to Step 5	0.001		0.000008	B<C, go to Step 7		DL
118	Heptachlor Epoxide	0.053	0.0036	0.00011					0.00011	8	0.0012	MinDL>C, to Step 5	0.0012		0.000094	B<C, go to Step 7		DL
119	**Aroclor 1016 (303d listed)**		0.03	0.00017					0.00017	1	0.0012	MinDL>C, to Step 5	0.0012		No RMP data, Step 7	No ambient data, Step 7		CD
120	**Aroclor 1242 (303d listed)**		0.03	0.00017					0.00017	1	0.01	MinDL>C, to Step 5	0.01		No RMP data, Step 7	No ambient data, Step 7		CD
121	**Aroclor 1254 (303d listed)**		0.03	0.00017					0.00017	1	0.014	MinDL>C, to Step 5	0.014		No RMP data, Step 7	No ambient data, Step 7		CD
122	**Aroclor 1221 (303d listed)**		0.03	0.00017					0.00017	1	0.016	MinDL>C, to Step 5	0.016		No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
123	**Aroclor 1232 (303d listed)**		0.03	0.00017					0.00017	1	0.016	MinDL>C, to Step 5	0.016		No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
124	**Aroclor 1248 (303d listed)**		0.03	0.00017					0.00017	1	0.016	MinDL>C, to Step 5	0.016		No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
125	**Aroclor 1260 (303d listed)**		0.03	0.00017					0.00017	1	0.016	MinDL>C, to Step 5	0.016		No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	CD
126	Toxaphene	0.21	0.0002	0.00075					0.0002	6	0.035	MinDL>C, to Step 5	0.035		No RMP data, Step 7	No ambient data, Step 7	Eff & Amb Monitoring	DL
	Tributyltin								0.01 [e]	4			0.02	**Effluent Limit required**	No RMP data, Step 7	No ambient data, Step 7		Y
	Chlorpyrifos																	
	Diazinon																	

a. According to salinity results from RMP stations, the closest stations to the outfall, the receiving water type is saline water. T
b. According to Table 1 of Section (b)(1) of CTR (40CFR 131.38), those criteria should use Basin Plan objectives.
c. Criteria for copper is taken from CTR. CTR criteria for copper is expressed as dissolved metals. The copper criter in the table is adjusted by dividing a factor of 0.83 to convert the dissovled to total metal concetration.
The criteria for Selenium is taken from NTR.
d. Acronyms in the "Final Result" column: CD: Cannot determine reasonable potential due to the absence of data
N: No resonable potential
Y: Has resonable potential
DL: Detection limit above water quality objective or CTR criteria
Y(B): Reasonable potential due to ambient data exceedances
e. Criteria for Tributyltin is determine according to Best Professional Judgement for protection of narrative toxicity criteria. The value of 0.01 µg/L is the EPA chronic water quality criteria for protection of salt water aquatic life.
f. Refer to the table entitled "Metal Criterial after Adjusting Hardness" for detailed determination of the criteria C in shaded area.
h. Acronyms in Step 7 column: DA: Daily Average TE: Toxicity Equivalent
MA: Monthly Average
I. The bold compounds in the Constituents Name column are TMDL listed pollutants.

Table 7
Basin Plan Water Quality Objectives and CTR Water Quality Criteria

		Basin Plan Objectives, ug/L				CTR Water Quality Objectives, ug/L		
		Saltwater		Freshwater		Saltwater		Human Health
# in CTR	CONSTITUENT	4-day	1-hr	Instant Max.	24-hr avg	CMC	CCC	Organisms only
2	Arsenic	36	69			69	36	
4	Cadmium	9.3	43			42	9.3	
5b	Chromium	50	1100			1100	50	
6	Copper		4.9			5.78	3.1	
7	Lead	5.6	140			220	8.5	
	Lead for CV calculation	5.6	140			220	8.5	
8	Mercury	0.025	2.1					0.051
9	Nickel			140	7.1	74	8.3	
10	Selenium					5	5	
11	Silver			2.3		2.24		
13	Zinc			170	58	95	85	
14	Cyanide		5			1	1	220000
16	2,3,7,8-TCDD (Dioxin)							1.40E-08
17	Acrolein							780
18	Acrylonitrile							0.66
19	Benzene							71
20	Bromoform							360
21	Carbon Tetrachloride							4.4
22	Chlorobenzene							21000
23	Chlordibromomethane							34
24	Chloroethane							
25	2-Chloroethylvinyl Ether							
26	Chloroform					130		
27	Dichlorobromomethane							46
28	1,1-Dichloroethane							
29	1,2-Dichloroethane							99
30	1,1-Dichloroethylene							3.2
31	1,2-Dichloropropane							39
32	1,3-Dichloropropylene							1700
33	Ethylbenzene							29000
34	Methyl Bromide							4000
35	Methyl Chloride							n
36	Methylene Chloride							1600
37	1,1,2,2-Tetrachloroethane							11
38	Tetrachloroethylene							8.85
39	Toluene							200000
40	1,2-Trans-Dichloroethylene							140000
41	1,1,1-Trichloroethane							
42	1,1,2-Trichloroethane							42
43	Trichloroethylene							81
44	Vinyl Chloride							525
45	2-Chlorophenol							400
46	2,4-Dichlorophenol							790
47	2,4-Dimethylphenol							2300
48	2-Methyl-4,6-Dinitrophenol							765
49	2,4-Dinitrophenol							14000
50	2-Nitrophenol							
51	4-Nitrophenol							
52	3-Methyl-4-Chlorophenol							
53	Pentachlorophenol					13	7.9	8.2
54	Phenol		500					4600000

Table 7
Basin Plan Water Quality Objectives and CTR Water Quality Criteria

		Basin Plan Objectives, ug/L				CTR Water Quality Objectives, ug/L		
		Saltwater		Freshwater		Saltwater		Human Health
# in CTR	CONSTITUENT	4-day	1-hr	Instant Max.	24-hr avg	CMC	CCC	Organisms only
55	2,4,6-Trichlorophenol							6.5
56	Acenaphthene							2700
57	Acenephthylene							
58	Anthracene							110000
59	Benzidine							0.00054
60	Benzo(a)Anthracene							***0.049***
61	Benzo(a)Pyrene							***0.049***
62	Benzo(b)Fluoranthene							***0.049***
63	Benzo(ghi)Perylene							
64	Benzo(k)Fluoranthene							***0.049***
65	Bis(2-Chloroethoxy)Methane							
66	Bis(2-Chloroethyl)Ether							1.4
67	Bis(2-Chloroisopropyl)Ether							170000
68	Bis(2-Ethylhexyl)Phthalate							5.9
69	4-Bromophenyl Phenyl Ether							
70	Butylbenzyl Phthalate							5200
71	2-Chloronaphthalene							4300
72	4-Chlorophenyl Phenyl Ether							
73	Chrysene							***0.049***
74	Dibenzo(a,h)Anthracene							***0.049***
75	1,2 Dichlorobenzene							17000
76	1,3 Dichlorobenzene							2600
77	1,4 Dichlorobenzene							2600
78	3,31-Dichlorobenzidine							0.077
79	Diethyl Phthalate							120000
80	Dimethyl Phthalate							2900000
81	Di-n-Butyl Phthalate							12000
82	2,4-Dinitrotoluene							9.1
83	2,6-Dinitrotoluene							
84	Di-n-Octyl Phthalate							
85	1,2-Diphenylhydrazine							0.54
86	Fluoranthene							370
87	Fluorene							14000
88	Hexachlorobenzene							0.00077
89	Hexachlorobutadiene							50
90	Hexachlorocyclopentadiene							17000
91	Hexachloroethane							8.9
92	Indeno(1,2,3-cd) Pyrene							**0.049**
93	Isophorone							600
94	naphthalene							
95	Nitrobenzene							1900
96	N-Nitrosodimethylamine							8.1
97	N-Nitrosodi-n-Propylamine							1.4
98	N-Nitrosodiphenylamine							16
99	Phenanthrene							
100	Pyrene							11000
101	1,2,4-Trichlorobenzene							
102	Aldrin					**1.3**		**0.00014**
103	alpha-BHC							0.013
104	beta-BHC							0.046
105	gamma-BHC					0.16		0.063

Table 7
Basin Plan Water Quality Objectives and CTR Water Quality Criteria

		Basin Plan Objectives, ug/L				CTR Water Quality Objectives, ug/L		
		Saltwater		Freshwater		Saltwater		Human Health
# in CTR	CONSTITUENT	4-day	1-hr	Instant Max.	24-hr avg	CMC	CCC	Organisms only
106	delta-BHC							
107	Chlordane					**0.09**	**0.004**	**0.00059**
108	4,4-DDT					**0.13**	**0.001**	**0.00059**
109	4,4-DDE							**0.00059**
110	4,4-DDD							**0.00084**
111	Dieldrin					**0.71**	**0.0019**	**0.00014**
112	alpha-Endosulfan					0.034	0.0087	240
113	beta-Endosulfan					0.034	0.0087	240
114	Endosulfan Sulfate							240
115	Endrin					**0.037**	**0.0023**	**0.81**
116	Endrin Aldehyde							0.81
117	Heptachlor					**0.053**	**0.0036**	**0.00021**
118	Heptchlor Epoxide					**0.053**	**0.0036**	**0.00011**
119 -125	PCBs						**0.03**	**0.00017**
126	Toxaphene					**0.21**	**0.0002**	**0.00075**
	Tributyltin							
	Chlorpyrifos							
	Diazinon							

Table 8
Ambient Background Data

		SIP Procedure
		Step 5
# in CTR	CONSTITUENT	Background = Max Observed Value, Central Bay RMP Sites, ug/L
2	Arsenic	2.22
4	Cadmium	0.127
5b	Chromium	4.4
6	Copper	2.455
7	Lead	0.804
	Lead for CV calculation	
8	Mercury	0.006
9	Nickel	3.5
10	Selenium	0.19
11	Silver	0.068
13	Zinc	4.6
14	Cyanide	N/A
16	2,3,7,8-TCDD (Dioxin)	N/A
17	Acrolein	N/A
18	Acrylonitrile	
19	Benzene	N/A
20	Bromoform	
21	Carbon Tetrachloride	
22	Chlorobenzene	
23	Chlordibromomethane	
24	Chloroethane	
25	2-Chloroethylvinyl Ether	
26	Chloroform	N/A
27	Dichlorobromomethane	
28	1,1-Dichloroethane	
29	1,2-Dichloroethane	
30	1,1-Dichloroethylene	
31	1,2-Dichloropropane	
32	1,3-Dichloropropylene	
33	Ethylbenzene	
34	Methyl Bromide	
35	Methyl Chloride	N/A
36	Methylene Chloride	
37	1,1,2,2-Tetrachloroethane	
38	Tetrachloroethylene	
39	Toluene	N/A
40	1,2-Trans-Dichloroethylene	
41	1,1,1-Trichloroethane	
42	1,1,2-Trichloroethane	
43	Trichloroethylene	
44	Vinyl Chloride	
45	2-Chlorophenol	N/A
46	2,4-Dichlorophenol	N/A
47	2,4-Dimethylphenol	N/A
48	2-Methyl-4,6-Dinitrophenol	N/A
49	2,4-Dinitrophenol	N/A

Table 8
Ambient Background Data

		SIP Procedure
		Step 5
# in CTR	CONSTITUENT	Background = Max Observed Value, Central Bay RMP Sites, ug/L
50	2-Nitrophenol	N/A
51	4-Nitrophenol	N/A
52	3-Methyl-4-Chlorophenol	N/A
53	Pentachlorophenol	N/A
54	Phenol	N/A
55	2,4,6-Trichlorophenol	N/A
56	Acenaphthene	0.0015
57	Acenephthylene	0.00053
58	Anthracene	0.0005
59	Benzidine	N/A
60	Benzo(a)Anthracene	0.0053
61	Benzo(a)Pyrene	0.0025
62	Benzo(b)Fluoranthene	0.0046
63	Benzo(ghi)Perylene	0.006
64	Benzo(k)Fluoranthene	0.0015
65	Bis(2-Chloroethoxy)Methane	N/A
66	Bis(2-Chloroethyl)Ether	N/A
67	Bis(2-Chloroisopropyl)Ether	N/A
68	Bis(2-Ethylhexyl)Phthalate	N/A
69	4-Bromophenyl Phenyl Ether	N/A
70	Butylbenzyl Phthalate	N/A
71	2-Chloronaphthalene	N/A
72	4-Chlorophenyl Phenyl Ether	N/A
73	Chrysene	0.0041
74	Dibenzo(a,h)Anthracene	0.0006
75	1,2 Dichlorobenzene	N/A
76	1,3 Dichlorobenzene	N/A
77	1,4 Dichlorobenzene	N/A
78	3,3[1]-Dichlorobenzidine	N/A
79	Diethyl Phthalate	N/A
80	Dimethyl Phthalate	N/A
81	Di-n-Butyl Phthalate	N/A
82	2,4-Dinitrotoluene	N/A
83	2,6-Dinitrotoluene	N/A
84	Di-n-Octyl Phthalate	N/A
85	1,2-Diphenylhydrazine	N/A
86	Fluoranthene	0.007
87	Fluorene	0.002078
88	Hexachlorobenzene	N/A
89	Hexachlorobutadiene	N/A
90	Hexachlorocyclopentadiene	N/A
91	Hexachloroethane	N/A
92	Indeno(1,2,3-cd) Pyrene	0.004
93	Isophorone	N/A
94	naphthalene	0.00229

Table 8
Ambient Background Data

		SIP Procedure
		Step 5
# in CTR	CONSTITUENT	Background = Max Observed Value, Central Bay RMP Sites, ug/L
95	Nitrobenzene	N/A
96	N-Nitrosodimethylamine	N/A
97	N-Nitrosodi-n-Propylamine	N/A
98	N-Nitrosodiphenylamine	N/A
99	Phenanthrene	0.0061
100	Pyrene	0.0051
101	1,2,4-Trichlorobenzene	N/A
102	Aldrin	N/A
103	alpha-BHC	N/A
104	beta-BHC	N/A
105	gamma-BHC	N/A
106	delta-BHC	N/A
107	Chlordane	0.00018
108	4,4-DDT	0.000066
109	4,4-DDE	0.00069
110	4,4-DDD	0.000313
111	Dieldrin	0.000264
112	alpha-Endosulfan	0.000031
113	beta-Endosulfan	0.000069
114	Endosulfan Sulfate	0.000011
115	Endrin	0.000016
116	Endrin Aldehyde	N/A
117	Heptachlor	0.000019
118	Heptchlor Epoxide	0.000094
119 -125	PCBs	N/A
126	Toxaphene	N/A
	Tributyltin	N/A
	Chlorpyrifos	N/A
	Diazinon	N/A

Table 9
Final Limit Calculations Using SIP Procedures

Constituent	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Silver (µg/l)	Zinc (µg/l)	4,4 DDE (µg/l)	Dieldrin (µg/l)	TCDD Equiv. (pg/L)	Tetra chloro ethylene (µg/L)	Bis (2-Ethylhexyl) Phthalate (µg/l)	Tributyltin (µg/L)
Acute Aquatic Life Water Quality Objective **(C)**	5.8	140	2.1	140	2.3	170						
Chronic Aquatic Life Water Quality Objective **(C)**	3.7	5.6	0.025	7.1		58						0.01
Human Health Water Quality Objective **(C)**			0.051	4600			0.00059	0.00014	0.014	8.85	5.9	
Dilution Credit **(D)**	9	9	0	9	9	9	0	0	0		9	
Ambient Background Concentration **(B)**	2.45	0.8	0.0064	3.5	0.068	4.6	0.00069	0.000264	NA	No Data	No Data	No Data
Acute Aquatic Life Effluent Concentration Allowance (ECA)	35.75	1392.8	2.1	1368.5	22.388	1658.6	NA	NA	NA		NA	
Chronic Aquatic Life Effluent Concentration Allowance (ECA)	15.25	48.8	0.025	39.5	NA	538.6	NA	NA	NA		NA	
Human Health Effluent Concentration Allowance (ECA)	NA	NA	0.051	45968.5	NA	NA	0.00059	0.00014	0.014			
Coefficient of Variation **(CV)**	0.4	0.95	0.6	0.44	0.53	0.29	0.6	0.6	0.88			
(s)	0.385253	0.802	0.554513	0.4206827	0.4976	0.284166	0.554513	0.55451303	0.757272961			
$(s)_4$	0.198042	0.4511	0.2935604	0.2174056	0.2605	0.144246	0.29356	0.29356038	0.420682719			
Z	2.326	2.326	2.326	2.326	2.326	2.326	2.326	2.326	2.326			
Acute Multiplier	0.439601	0.2136	0.3210832	0.4106471	0.3557	0.537625	0.321083	0.32108321	0.228850635			
Chronic Multiplier	0.64337	0.3877	0.5274334	0.6175144	0.5644	0.722445	0.527433	0.52743344	0.410647117			
Long Term Average (Acute)	15.71572	297.45	0.6742747	561.97058	7.96446	891.7045	NA	NA	NA			
Long Term Average (Chronic)	9.811388	18.922	0.0131858	24.391821	NA	389.109	NA	NA	NA			
Lowest LTAs	9.811388	18.922	0.0131858	24.391821	7.9645	389.109	NA	NA	NA			
n	4	4	4	4	4	4	4	4	4			
$(s)_n$	0.198042	0.4511	0.2935604	0.2174056	0.2605	0.144246	0.29356	0.29356038	0.420682719			
Z(AMEL)	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645	1.645			
AMEL Multiplier	1.358212	1.897	1.5524246	1.3965426	1.4838	1.254682	1.552425	1.55242461	1.828573397			
MDEL Multiplier	2.274793	4.6824	3.1144574	2.4351809	2.811	1.860033	3.114457	3.11445743	4.369662341			
$AMEL_{(aquatic\ life)}$	**13.3**	**35.89**	**0.020**	**34.1**	**11.82**	**488.2**	**NA**	**NA**	**NA**			
$MDEL_{(aquatic\ life)}$	**22.3**	**88.599**	**0.041**	**59.4**	**22.388**	**723.8**	**NA**	**NA**	**NA**			
$AMEL_{(human\ health)}$	**NA**	**NA**	**0.051**	**45968.5**	**NA**	**NA**	**0.00059**	**0.00014**	**0.014**			
MDEL/AMEL Multiplier	1.674844	2.4684	2.0061892	1.7437212	1.8944	1.482474	2.006189	2.00618916	2.389656521			
$MDEL_{(human\ health)}$	**NA**	**NA**	**0.1023156**	**80156.246**	**NA**	**NA**	**0.001184**	**0.00028087**	**0.033455191**			

Table 9
Final Limit Calculations Using SIP Procedures

Constituent	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Silver (µg/l)	Zinc (µg/l)	4,4 DDE (µg/l)	Dieldrin (µg/l)	TCDD Equiv. (pg/L)	Tetra chloro ethylene (µg/L)	Bis (2-Ethylhexyl) Phthalate (µg/l)	Tributyltin (µg/L)
94 Order Limits. Daily Max:	37	53	0.7	65	23	500	NA	0.1	5,000,000	NA	NA	0.05
Calculated WQBEL (lower of human health or aquatic life criteria):												
MDEL	22.3	88.6	0.041	59.4	22.388	723.8	0.0012	0.00028	0.033	NA	NA	NA
AMEL	13.3	35.9	0.020	34.1	11.818	488.2	0.00059	0.00014	0.014	NA	NA	NA
Performance (max observed conc. Or lowest detection limit if not detected) November 98 to November 01 (MEC)	33.3	14.9	0.169	8.2	3.6	364.8	<0.004	<0.0019	0			
Lowest ML from SIP	0.5	2	0.2	1	1	1	0.05	0.01	NA			
· Is MEC>AMEL?	Yes	No	Yes	No	No	No			No			
· If all data below DL									Yes			
is lowest DL>ML?							Yes	Yes				
Ability to Comply	no	Yes	no	Yes	Yes	Yes	unknown	unknown	no			
w/ calculated WQBEL							Note (2)	Note (2)				
Standard Deviaion			0.0234						NA			
Average/mean			0.0188						NA			
Mean + 3standard deviation	45		0.089						NA			
Intrim performance limit:												
(lower of 94 order limit or												
Mean + 3xstandard deviation)	37		0.089						5,000,000			

Table 9
Final Limit Calculations Using SIP Procedures

Acronyms Definition:

AMEL: Average Monthly Effluent Limitation
MDEL: Maximum Daily Effluent Limitation
MED: Maximum Pollutant Concentration from step 3 of resonable potential analysis
WQEBL: Water Quality Based Effluent Limitation
ML: Minimum Level
SIP: State Implementation Plan
DL: Reported detection limit
NA: Not Applicable
Note: (1) Performance based limit of secondary treatment plants in Bay Area. See Statical Analysis of Pooled Data From Regionwide Ultraclean Mercury Sampling For Municipal Dischargers by Key Katen, June 7, 2001
(2) Interim permformance based effluent limit for selenium and cyanide are calculated using standard statistical probit analysis at 99.87 percentile. See Table 9b and Table 9c for detail.

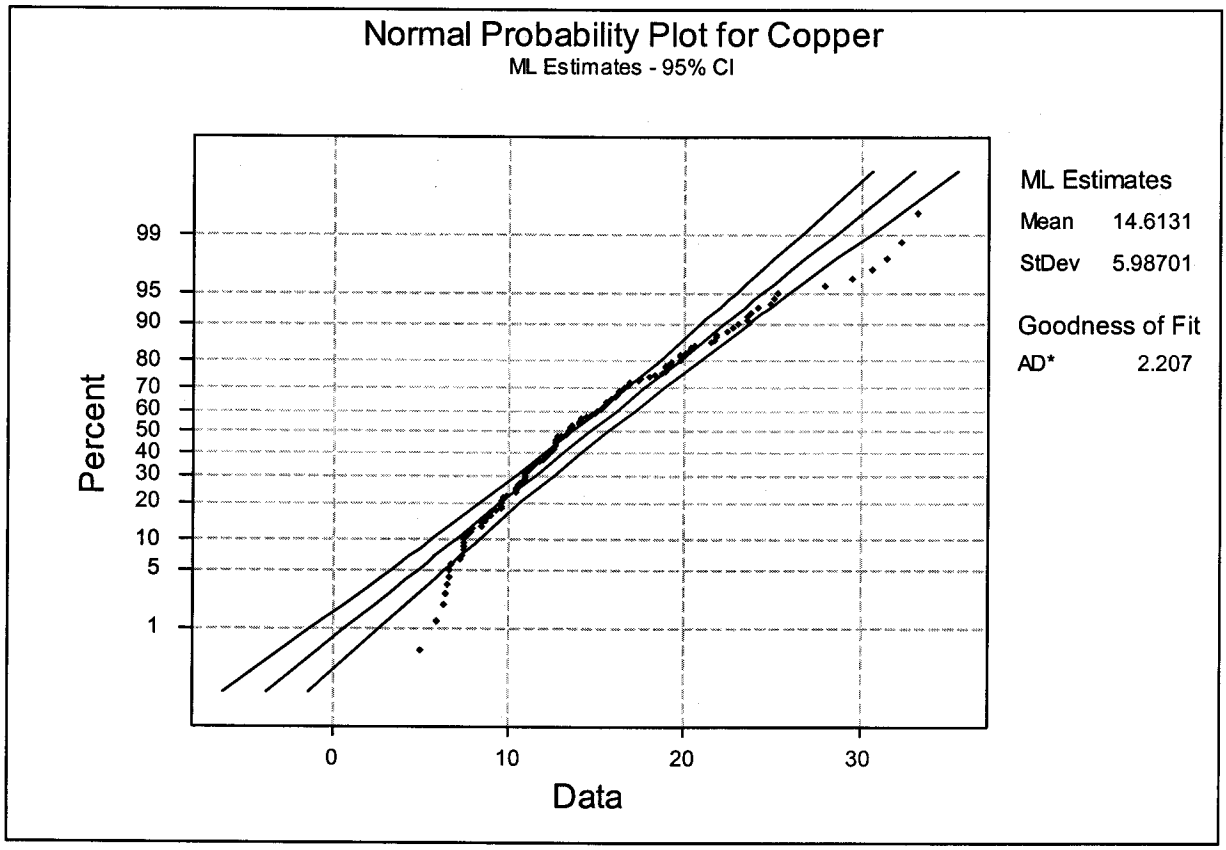
Table 10
Copper Interim Limit Calculation

Date		Copper	Ln Copper
		6	
		ug/L	
11/2/98		15.5	2.740840024
11/18/98		15.2	2.721295428
11/25/98		18.3	2.90690106
12/11/98		9.3	2.2300144
12/19/98		12	2.48490665
12/20/98		11.2	2.415913778
1/1/99		8.4	2.128231706
1/9/99		12.7	2.541601993
1/10/99		12.7	2.541601993
1/25/99		7.4	2.00148
2/1/99		11.64	2.454447442
3/5/99		10.4	2.341805806
3/13/99		10.5	2.351375257
4/1/99		7.41	2.002830439
4/14/99		14.12	2.647592232
4/23/99		4.9	1.589235205
5/1/99		8.9	2.186051277
5/2/99		9.6	2.261763098
5/10/99		7.8	2.054123734
5/18/99		6.5	1.871802177
5/26/99		7.6	2.028148247
6/3/99		6.53	1.876406943
6/11/99		10.42	2.343727036
6/19/99		10.87	2.386006701
6/20/99		9.55	2.256541154
7/1/99		9.6	2.261763098
7/5/99		7.4	2.00148
7/13/99		10.4	2.341805806
7/21/99		10.9	2.388762789
7/25/99		7.2	1.974081026
8/5/99		7.3	1.987874348
8/13/99		6.7	1.902107526
8/21/99		7.4	2.00148
8/23/99		5.8	1.757857918
9/4/99		7.9	2.066862759
9/7/99		6.6	1.887069649
9/16/99		10.8	2.379546134
9/24/99		6.3	1.840549633
10/2/99		8.7	2.163323026
10/3/99		8.6	2.151762203
10/11/99		11.3	2.424802726
10/19/99		10.5	2.351375257
10/24/99		12.4	2.517696473
11/3/99		14	2.63905733
11/11/99		18.7	2.928523524
11/21/99		16.9	2.827313622
12/11/99		19.3	2.960105096
12/13/99		20.1	3.000719815
12/21/99		29.6	3.387774361
1/3/00		14.7	2.687847494
1/25/00		21.5	3.068052935
2/2/00		25.3	3.230804396
2/8/00		23.6	3.161246712
3/1/00		21.8	3.08190997
3/15/00		18.9	2.939161922
3/11/00		33.3	3.505557397
3/29/00		18	2.890371758

Table 10
Copper Interim Limit Calculation

Date		Copper	Ln Copper
		6	
		ug/L	
4/6/00		9.6	2.261763098
4/20/00		11.5	2.442347035
4/27/00		11.3	2.424802726
5/6/00		6.4	1.85629799
5/12/00		8.9	2.186051277
5/19/00		13.3	2.587764035
5/26/00		8.4	2.128231706
6/3/00		20.4	3.015534901
6/10/00		12.7	2.541601993
6/17/00		13.5	2.602689685
6/24/00		11.1	2.406945108
7/2/00		10.9	2.388762789
7/9/00		10.9	2.388762789
7/16/00		9.7	2.272125886
7/23/00		9.7	2.272125886
7/30/00		12.4	2.517696473
8/7/00		32.4	3.478158423
8/14/00		16.1	2.778819272
8/21/00		30.7	3.424262655
8/28/00		31.5	3.449987546
9/5/00		25.14	3.224460203
9/1/00		19.81	2.986186861
9/20/00		24.2	3.186352633
9/28/00		16.29	2.790551423
10/4/00		22.5	3.113515309
10/11/00		28	3.33220451
10/18/00		21.7	3.077312261
10/25/00		16.5	2.803360381
11/3/00		11.7	2.459588842
11/9/00		15.5	2.740840024
11/17/00		16.6	2.809402695
11/21/00		15.5	2.740840024
12/2/00		13.4	2.595254707
12/9/00		13	2.564949357
12/16/00		17.4	2.856470206
12/23/00		10.6	2.360854001
1/7/01		13.6	2.609146175
1/14/01		22.8	3.127697549
1/21/01		16.8	2.81929327
1/28/01		12.2	2.503672379
2/5/01		19.8	2.987064628
2/14/01		24.9	3.214201764
2/26/01		20.6	3.026580007
3/6/01		9.9	2.293515771
3/13/01		12.8	2.548669014
3/20/01		15.4	2.731462945
3/27/01		14.0	2.638837005
4/4/01		13.5	2.604613759
4/11/01		16.9	2.830000276
4/18/01		18.9	2.941795628
4/25/01		23.1	3.138687146
5/3/01		14.9	2.698314038
5/10/01		17.5	2.860323783
5/17/01		16.3	2.789008502
5/24/01		15.7	2.753973103
5/31/01		13.6	2.60924011
6/6/01		19.2	2.954989359
6/8/01		18.9	2.938099856
6/15/01		14.4	2.665812601
6/22/01		14.1	2.644407876
6/29/01		23.8	3.168757995
7/9/01		16.2	2.787041396
7/13/01		13.4	2.598001491
7/21/01		20.3	3.011322226
7/28/01		14.7	2.688067701
8/4/01		15.9	2.765711812
8/11/01		23.6	3.15956395
8/18/01		15.3	2.728028199
8/22/01		21.8	3.080643806
8/25/01		12.2	2.503192228
9/4/01		12.0	2.48490665
9/10/01		12.7	2.541601993
9/17/01		12.5	2.525728644
9/24/01		11.9	2.4765384
10/1/01		15.0	2.707268322
10/9/01		12.6	2.533384416
10/16/01		10.9	2.387554381
10/24/01		12.8	2.553333765
11/8/01		19.8	2.984943428
Mean (ug/L)		14.61	2.60
Standard Deviation		6.01	0.41
Coefficient of Variation (CV)		0.41	0.16
min (ug/L)		4.90	1.59
max (ug/L)		33.3	3.505557397
Average + 3SD		32.6367	3.816294371
skiew		0.93386	-0.020185132
EXP(Ln (Ave+3sd))			45.43552876

Table 10
Copper Interim Limit Calculation



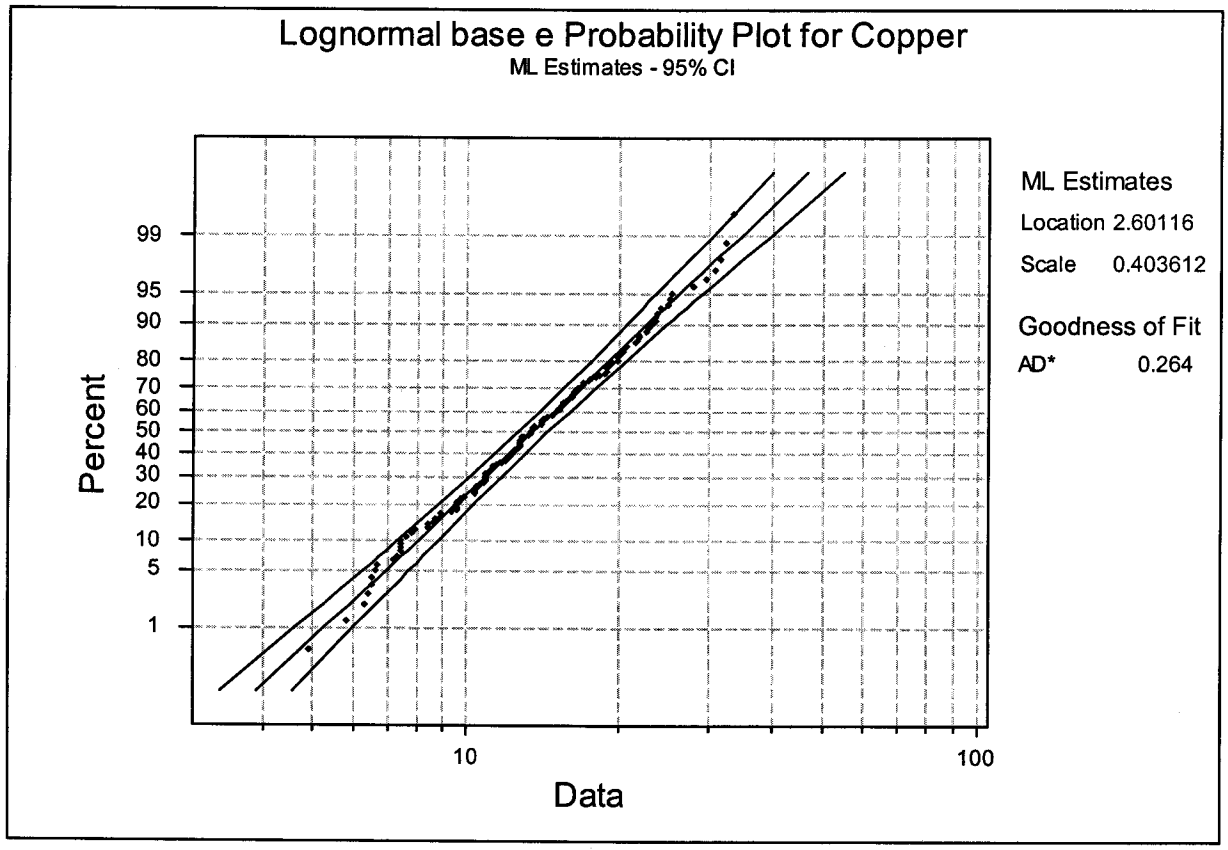


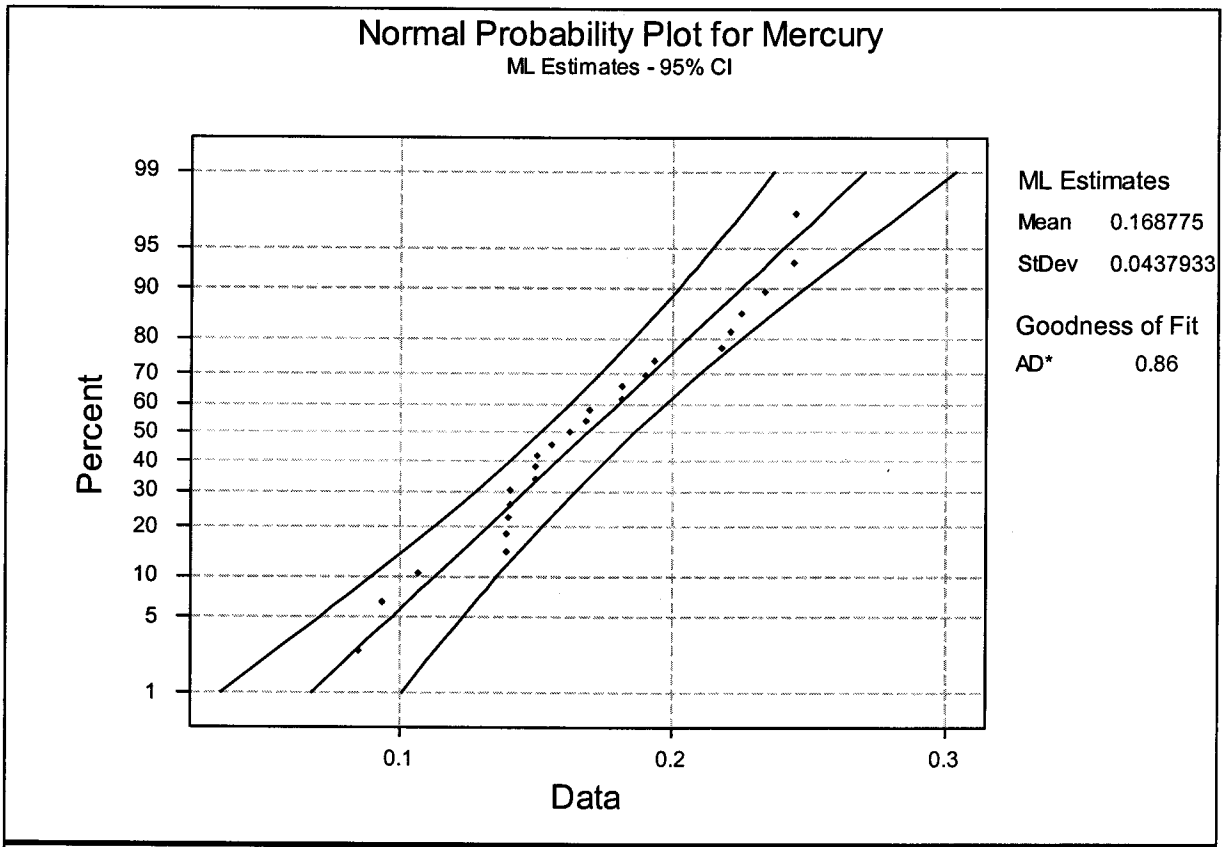
Table 11
Salinity Data

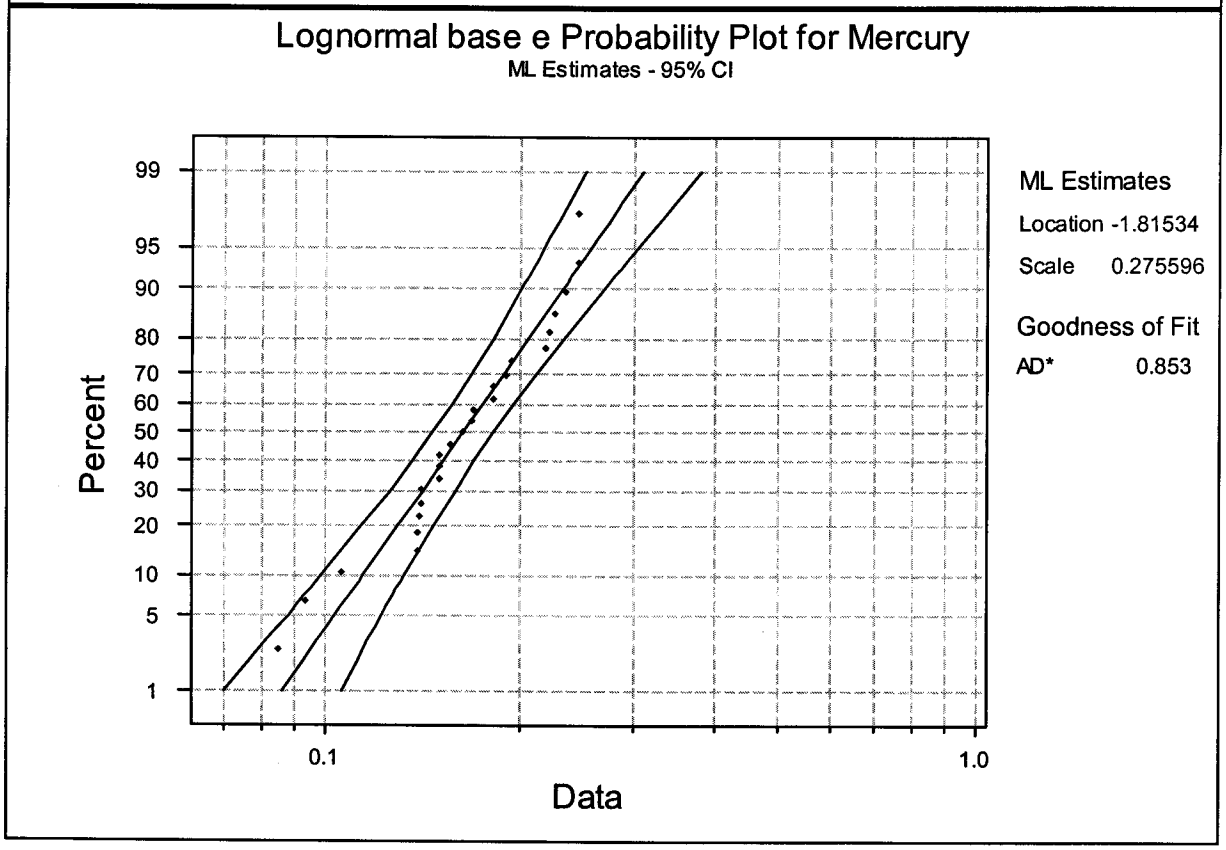
Station	Date	Salinity(ppt)	
Golden Gate	2/3/99	35.9	
Yerba Buena Island	2/4/99	16.7	
Alameda	2/4/99	21.9	
Golden Gate	4/15/99	30.2	
Yerba Buena Island	4/14/99	24	
Alameda	4/14/99	23.5	
Yerba Buena Island	7/16/99	29.1	
Alameda	7/16/99	28.7	
Oyster Point	7/13/99	28.3	
Yerba Buena Island	1/29/98	21.1	
Alameda	1/29/98	21	
Golden Gate	4/21/98	27.7	
Yerba Buena Island	4/20/98	17.6	
Alameda	4/20/98	27.9	
Golden Gate	7/22/98	30.7	
Yerba Buena Island	7/22/98	25	
Alameda	7/22/98	25.6	
Golden Gate	1/24/97	28.4	
Yerba Buena Island	1/23/97	12.1	
Alameda	1/23/97	12	
Golden Gate	4/15/97	29.3	
Yerba Buena Island	4/14/97	25.6	
Alameda	4/15/97	24.2	
Golden Gate	7/31/97	31.2	
Yerba Buena Island	7/30/97	29.9	
Alameda	7/30/97	30	
Golden Gate	2/7/96	27.6	
Yerba Buena Island	2/7/96	14.7	
Alameda	2/7/96	17.8	
Golden Gate	4/29/96	31	
Yerba Buena Island	4/30/96	24.1	
Alameda	4/30/96	23.2	
Golden Gate	7/25/96	32.6	
Yerba Buena Island	7/26/96	29.2	
Alameda	7/26/96	28.8	
max		35.9	
min		12	
Average		25.33143	

Table 12 (Mercury Mass)

Date	Effluent Monthly Average mgd	Mercury Monthly Average ug/L	Mercury Monthly Loading kg/month	12 Month Monthly Moving Average kg/month	Ln 12 Month Monthly Moving Average kg/month
November-98	83	0.02	0.191066		
December-98	72	0.02	0.165744		
January-99	87	0.01	0.100137		
February-99	110	0.03	0.37983		
March-99	83	0.03	0.286599		
April-99	84	0.04	0.386736		
May-99	67	0.03	0.231351		
June-99	66	0.04	0.303864		
July-99	67	0.02	0.154234		
August-99	65	0.04	0.29926		
September-99	68	0.01	0.078268		
October-99	66	0.01	0.075966		
November-99	75	0.04	0.3453	0.221087917	-1.509194844
December-99	64	0.04	0.294656	0.23394075	-1.452687401
January-00	91	0.01	0.104741	0.244683417	-1.407790081
February-00	122	0.01	0.140422	0.245067083	-1.406223296
March-00	89	0.02	0.204878	0.225116417	-1.491137603
April-00	77	0.01	0.088627	0.218306333	-1.521856004
May-00	72	0.01	0.082872	0.193463917	-1.642664261
June-00	69	0.01	0.079419	0.181090667	-1.708757452
July-00	64	0.01	0.073664	0.162386917	-1.817773417
August-00	67	0.06	0.462702	0.15567275	-1.859999232
September-00	65	0.03	0.224445	0.169292917	-1.77612483
October-00	77	0.02	0.177254	0.181474333	-1.706641049
November-00	71	0.01	0.081721	0.189915	-1.661178675
December-00	68	0.01	0.078268	0.167950083	-1.784088467
January-01	88	0.01	0.101288	0.14991775	-1.897668469
February-01	121	0.01	0.139271	0.14963	-1.899589699
March-01	79	0.01	0.090929	0.149534083	-1.90023093
April-01	78	0.01	0.089778	0.140038333	-1.965839084
May-01	65	0.01	0.074815	0.14013425	-1.965154387
June-01	64	0.01	0.073664	0.139462833	-1.969957141
July-01	61	0.01	0.070211	0.13898325	-1.973401857
August-01	61	0.01	0.070211	0.1386955	-1.975474396
September-01	60	0.01	0.06906	0.105987917	-2.244430185
October-01	65	0.01	0.074815	0.093039167	-2.374734728
November-01	82	0.01	0.094382	0.084502583	-2.470973173
Mean (ug/L)	76.02702703	0.018918919	0.163255351	0.168774967	-1.815342826
Standard Deviation	15.33783718	0.013077501	0.109917826	0.044696309	0.281279334
min (ug/L)	60	0.01	0.06906	0.084502583	-2.470973173
max (ug/L)	122	0.06	0.462702	0.245067083	-1.406223296
Average + 3SD	122.0405386	0.058151421	0.49300883	**0.302863894**	-0.971504823
Skew	1.709049502	1.391946853	1.177245375	0.101581851	-0.555443534

Notes: Based on the skew number data set exihibit Nomal behavior.
Therefore, 0.3 kg/month is used


Normal Probability Plot for Mercury
ML Estimates - 95% CI
Percent
99
95
90
80
70
60
50
40
30
20
10
5
1
0.1
0.2
0.3
Data
ML Estimates
Mean 0.168775
StDev 0.0437933
Goodness of Fit
AD* 0.86


Lognormal base e Probability Plot for Mercury
ML Estimates - 95% CI
Percent
99
95
90
80
70
60
50
40
30
20
10
5
1
0.1
1.0
Data
ML Estimates
Location -1.81534
Scale 0.275596
Goodness of Fit
AD* 0.853

FACT SHEET - *ATTACHMENT 1*

DETERMINATION OF TECHNOLOGY-BASED REQUIREMENTS FOR NPDES PERMIT NO. CA0038610: BAYSIDE FACILITIES, CITY AND COUNTY OF SAN FRANCISCO.

PURPOSE:

This document is intended to demonstrate that the nine minimum controls1 specified in the permit are the appropriate controls to implement the Clean Water Act's requirements for technology-based limitations applied to wet weather overflows. This document is similar to a related document that supported San Francisco's NPDES permit for Westside discharges: *Determination of Technology-Based Requirements for NPDES Permit No. CA0037681: Westside Wet-Weather Facilities and Southwest Bay Outfall, City and County of San Francisco.* Since San Francisco has used the same approach for controlling wet weather overflows for both Bayside and Westside systems, it is appropriate to use similar assessments of the technology-based limitations.

BACKGROUND:

The Clean Water Act (CWA) established the National Pollutant Discharge Elimination System (NPDES) permit program to regulate all point source discharges to the nation's waters. All dischargers must comply with two sets of requirements: (1) technology-based minimum requirements that apply to all dischargers of a specified class or (2) more stringent effluent limits, if necessary, to meet local water quality standards (WQS). (CWA, Section 301(b)). Thus, effluent discharge permit limitations either are technology-based or water quality based. The technology-based requirements for non-POTW discharges (such as Combined Sewer Overflows2 (CSOs)) must reflect:

1. *Best Practicable Control Technology Currently Available (BPT)*: The basic control level that all discharges (other than POTWs) must attain. BPT was the initial technology-based control level required by the CWA and usually reflected the average of the best existing performance in a category. This treatment level is determined first and then used in calculating the following two control levels, which may be more stringent.

2. *Best Conventional Pollutant Control Technology (BCT)*: Treatment that may be applied in addition to BPT for removal of conventional pollutants such as suspended solids, biochemical oxygen demand, oil and grease, pH, and coliform bacteria.

3. *Best Available Technology Economically Achievable (BAT)*: Treatment that may be applied in addition to BPT for removal of toxic pollutants and other non-toxic, non-conventional

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1 The "nine minimum controls" are technology-based methods to reduce the impact of combined sewer overflows (CSO). They constitute the first phase of controls as described in EPA's 1994 CSO Control Policy.

2 CSO is defined under Section I.A. of EPA's 1994 CSO Control Policy as " the discharge from a combined sewer system (CSS) at a point prior to the Publicly Owned Treatment Works (POTW) treatment plant." A CSS is defined as "A wastewater collection system owned by a State or municipality which conveys sanitary wastewater (domestic, commercial, and industrial wastewater) and storm water through a single pipe system to a POTW treatment plant."

pollutants such as floatables.

EPA establishes some technology-based requirements by issuing industry-wide effluent guidelines. For CSOs, no effluent guidelines have been promulgated for BPT, BCT, or BAT. The permit writer must therefore use Best Professional Judgement (BPJ) to determine the level of treatment that BPT, BCT and BAT represent and must establish limits to ensure these levels of treatment.

San Francisco strategy for CSO control includes a combination of containment and treatment facilities in addition to non-structural controls. (See Fact Sheet for Bayside permit for a detailed description of San Francisco's Bayside CSO facilities). Treated wet weather wastewater is discharged through shoreline discharge locations as well as major outfalls. This assessment addresses all these discharges. The technology-based controls (BPT, BCT, BAT) are applicable to the following elements of San Francisco's Bayside Combined Sewer System as follows:

Southeast Water Pollution Control Plant

The Southeast Water Pollution Control Plant (Southeast WPCP) is a Publicly Owned Treatment Works (POTW) providing secondary-level treatment for Bayside wastewater. All dry weather flows directed to this POTW receive treatment to the secondary standards identified in the regulations (40 CFR 133). During wet weather this facility functions as both a POTW for the dry weather component of the flow and as a CSO treatment facility (subject to the BCT/BAT requirements) for the incremental flow from the stormwater runoff.

Table 1 - Discharge Identification (Southeast WPCP)

Discharge location	*Flow (mgd)*	*Treatment facilities used*	*Waste Number*
Dry Weather			
Pier 80 (Central Bay)	67 (avg.)	Secondary	**001**
(including minor wet weather)			
Pier 80	*Up to* 110	Secondary	**001**
Wet Weather - Stage 1			
Pier 80	110	Secondary (1)	**003**
Quint St. (Islais Creek)	0 *to* 40	Secondary (1)	**002**
Wet Weather - Stage 2			
Pier 80	110	Primary and secondary blend	**003**
Quint St.	40 *to* 140	Secondary (1)	**002**

Table taken from Table 6 of the Fact Sheet

(1) During wet weather, maximum flow is being directed to the secondary treatment units in order to maximize pollutant removal (in conformance with CSO Control Policy minimum technology requirement #4). Thus, the treated wastewater may not meet secondary standards at all times.

North Point Wet Weather Treatment Facility
During wet weather, this plant provides up to 150 MGD of primary treatment to combined sewer flows in the Northeast section of San Francisco. This treated wastewater is discharged at the shoreline. Flows to the two treatment facilities are maximized prior to discharge of CSOs to near-shore waters of the Bay

Flow-through Treatment in the Storage/Transports with Discharge to the Shoreline
This wastewater discharged from the storage/transports (after flow-through treatment) to the shoreline does not enter the Southeast Treatment Plant, and is not subject to secondary treatment requirements. Instead, this discharge must meet BPT/BCT/BAT-based limits established using BPJ. This discharge is defined as a CSO.

Summary of Analysis:
In Section I of this document, the Regional Water Quality Control Board (Board) examines the nine minimum controls established in the 1994 CSO Control Policy.[3] The Board concludes that these measures are a cost-effective means for achieving effluent reductions of both conventional and non-conventional pollutants. The Board also concludes that implementation of these measures is consistent with the treatment processes and engineering systems employed by San Francisco and would result in no deleterious non-water quality environmental impacts. Therefore, these measures pass the BPT/BCT/BAT cost test. The NPDES permit for Bayside discharges therefore establish the nine minimum controls as technology-based requirements, applicable during wet weather, and will contain provisions to ensure compliance with these controls.

In Section II of this document, EPA performs a BPJ analysis for the City of San Francisco's Combined Sewer System Bayside discharges and concludes:

a. The system currently in place provides effluent reduction at a cost in excess of that which would be required by BPT/BCT/BAT; and

b. No additional treatment facilities can be justified on a BPT/BCT/BAT cost basis.

The NPDES permit which includes Bayside CSO discharges will include requirements to ensure proper operation of the existing CSO facilities. This will provide treatment in excess of that which would be required based on BPT/BCT/BAT requirements. This analysis also provides the Board's assessment of whether effluent limitations based on increased storage of wet weather flows can be justified on a BAT or BCT basis.

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3 Codified into federal law by the Wet Weather Act of 2000.

In conclusion, by including requirements in the NPDES permit to ensure the continued implementation of the nine measures outlined in the CSO Control Policy and to require proper operation of the existing CSO facilities, the Board has established the technology-based requirements mandated by the Clean Water Act.

I. Establishment of the Nine Minimum Controls as Minimum BCT/BAT Requirements:

EPA adopted the *CSO Control Policy* which provides guidance to the permit writer. 59 Fed. Reg. 18688 (April 19, 1994). This CSO Control Policy was developed with extensive input from key stakeholders including representatives from States, environmental groups, and municipal organizations. The policy establishes a consistent approach for controlling discharges from CSOs to the Nation's waters through the NPDES program. The nine minimum controls outlined in the CSO Control Policy were developed after extensive review of existing CSO control systems, the cost of the controls and the effectiveness of the technologies. Though the CSO Control Policy has not been promulgated as a federal regulation, the Wet Weather Water Quality Act of 2000 amended Section 402 of the Clean Water Act by adding the following:

> '(q) COMBINED SEWER OVERFLOWS
>
> (1) REQUIREMENTS FOR PERMITS, ORDERS, AND DECREES - Each permit, order, or decree issued pursuant to this Act after the date of enactment of this subsection for a discharge from a municipal combined storm and sanitary sewer shall conform to the Combined Sewer Overflow Control Policy signed by the Administrator...'

The nine minimum controls, as describe in the Policy, are often established as BAT/BCT requirements. This approach is consistent with EPA's 1994 CSO Policy, which states (Section IV. Expectations for Permitting Authorities):

> *All permits for CSO discharges should require the nine minimum controls as a minimum best available technology economically achievable and best conventional technology (BAT/BCT) established on a best professional judgment (BPJ) basis by the permitting authority (40 CFR Section 125.3).*

These nine measurements are as follows:

1. Proper operation and regular maintenance
2. Maximum use of the collection system for storage
3. Review and modification of pretreatment programs
4. Maximization of flow to the POTW for treatment
5. Prohibition of dry weather overflows
6. Control of solid and floatable materials in CSO discharges
7. Pollution prevention programs
8. Public notification
9. Monitoring

Thus, pursuant to the Policy, these nine minimum controls will constitute the minimum technology as required by Section 301(b)(2) of the Clean Water Act. The Board staff, based on their best professional judgment, have determined that these controls can be appropriately applied to the discharger. Furthermore, an evaluation of the City's consistency with the nine minimum control technologies shows that the City has met or exceeded each technology.

The following text describes how San Francisco has implemented each of the nine control technologies and describes the permit conditions that ensure future consistency with these objectives. Finally, each control is identified as a BCT control (for the removal of conventional pollutants) and/or at BAT control (for the removal of toxic and/or non-conventionals including floatables. (See Part II for a more detailed discussion of BPT, BCT, and BAT).

1. *Proper Operation and Regular Maintenance:* Proper operation and maintenance of Combined Sewer Systems (CSSs) decreases pollutant loadings that occur during wet-weather events. Solids can settle out of the sewage and collect in the large combined sewers during dry-weather periods; these solids can become remobilized and flushed from the combined system by the first storm - the so-called "first flush" phenomenon. San Francisco's hilly topography minimizes the amount of sewage solids that settle out of the wastewater. Sewer system inspection and maintenance ensures that breaks and blockages do not occur when the system is fully charged, as it is during storm events. Operation and maintenance of the City's CSS fall within the purview of three bureaus within the City's Department of Public Works: the Bureau of Street and Sewer Repair, the Bureau of Water Pollution Control, and the Bureau of Engineering. The City's program of sewer system maintenance includes as-needed cleaning of sewer pipes and catch basins, repairing main and side sewers, relieving flooded catch basins and plugged main sewers, and investigating public requests. The City also has a program whereby television cameras are routed through sewer lines to visually inspect lines for breaks, illegal connections, etc.

   Operation and maintenance procedures for the City's Bayside Facilities are described in the City's Bayside System Operations Plan. The system allows for combined flows to be routed first to the Southeast Water Pollution Control Plant or the North Point Wet Weather Treatment Facility or stored in the storage/transports for later treatment. Only after these steps have been taken are overflows of baffled and settled combined effluent discharged to the near-shore waters through the CSO structures. Procedures described in the Operation Plan ensure that the system operates as it was designed and constructed.

   The draft NPDES permit requires that the City review and update its Operations and Maintenance Manual annually. This manual is subject to the review and approval of the Board. This requirement represents both a BCT and BAT control because it results in the removal of conventional, toxic and non-conventional pollutants.

2. *Maximum Use of the Collection System for Storage:* This requirement refers to the use of existing sewers to hold a portion of surplus flows during storm events. To the extent allowed by existing facilities, this has always been San Francisco's policy. The City's hilly terrain, however, previously limited the ability of the sewer system to store flows. The storage/transport construction program has increased the citywide storage capacity of existing sewers to an estimated 23 million gallons (MG).

   The storage/transports, which are part of the Bayside CSO control facilities, provide for the temporary storage of combined flows that exceed the treatment plant capacity. Stored wastewater is treated after the storm flow subsides. Only after the storage facilities are filled to capacity and the treatment plants are operating at maximum capacity does an overflow to the shoreline occur. The storage in both the sewers themselves and the system as a whole is therefore maximized before an overflow event occurs. However, it should be noted that the storage/transport facilities were constructed as necessary components of the Master Plan to meet water quality standards. The increased storage of 23 MGD in the existing sewers is an incidental benefit. Minimum technology #2 refers to sewer system storage rather than the large volume storage provided by the storage/transports.

   Since the maximization of collection system for storage is inherent in the design of these facilities, no NPDES permit condition is necessary to ensure future consistency with this provision other than the standard NPDES permit conditions requiring proper operation and maintenance and prohibiting unnecessary bypass of treatment facilities. The maximization of the collection system for storage represents both a BCT and BAT control because it results in the removal of conventional, toxic and non-conventional pollutants.

3. *Review and Modification of Pretreatment Requirements:* Pretreatment programs limit the amount of toxic pollutants discharged to the sewer system from industries and related sources. San Francisco has an approved and fully functioning Industrial Waste Pretreatment Program, including the establishment of Local Limits for several pollutants.[4] Although San Francisco has relatively few industrial sources, the City has an ongoing effort to identify industrial and other pollutant sources and reduce the loading of toxic pollutants and other pollutants of concern. This program, administered by the City's Bureau of Environmental Regulation and Management (BERM), includes enforcement inspections, pretreatment monitoring, collection system monitoring, and permitting of Significant Industrial Users (SIUs).

   The industrial waste dischargers of toxic pollutants to the City's wastewater system include hospitals and other medical facilities, laundry, automotive repair, photographic, food processing, clothing, and car wash facilities. Other than ship repair, the City has very few "heavy" industries. Many of the toxic pollutants in the system are believed to

4 San Francisco Public Works Code, Section 118, Article 4.1, Industrial Waste

be carried by runoff from road surfaces and to originate from motor vehicles. (The runoff is not generally affected by pretreatment programs but is addressed by street sweeping and the City's other pollution prevention activities.)

The draft NPDES permit requires the implementation, review and modification, as necessary, of pretreatment requirements. This requirement represents a BAT control because it results primarily in the removal of toxic pollutants.

4. *Maximization of Flow to the POTW for Treatment:* Flow maximization benefits the environment by ensuring that the maximum amount of pollutants is removed from the wastewater. Routing flows to treatment facilities is preferable to overflows, which receive less treatment. However, maximizing flows to treatment facilities means that all flows may not receive secondary-level treatment, particularly during larger storms.

   This requirement refers to operating treatment plants at maximum capacity during storm events. This requirement has always been San Francisco's policy. The City's Bayside system has been designed and constructed to maximize flows to the Southeast Water Pollution Control Plant and the North Point Wet Weather Treatment Facility. The Southeast WPCP provides about 67 MGD (avg.) of dry weather secondary-level treatment but up to 250 MGD of secondary or primary treatment capacity during wet-weather. The North Point Wet Weather Treatment Facility provides up to 150 MGD of primary-level treatment. Flows to the two treatment facilities are maximized prior to discharge of CSOs to near-shore waters of the Bay.

   While the City can treat 250 MGD of flow to primary levels at the Southeast WPCP, the plant can provide secondary treatment for only 110 MGD. Thus, when wet weather flow exceeds 110 MGD, Southeast WPCP is designed to allow excess flows (between 110 MGD and 250 MGD) to receive primary-only treatment. There are two regulatory options for addressing this primary-only flow. Under one option, these facilities can be considered as "CSO treatment facilities" and subject to the BCT/BAT requirements rather than the secondary treatment standards.

   Under a second option, the primary-only flow would be considered a "bypass." The CSO Policy describes the circumstances where such bypassing may be explicitly authorized in a CSO permit. 59 Fed. Reg. 18693.

   For such bypassing to be permitted, the permittee must justify the cut-off point at which the flow will be diverted from the secondary treatment portions of the treatment plant, and provide a benefit-cost analysis demonstrating that the conveyance of wet weather flow to the POTW for primary treatment is more beneficial than other CSO abatement alternatives such as storage and pump back for secondary treatment, sewer separation, or satellite treatment.

   The City performed a benefit-cost on CSO abatement alternatives as part of its 1972

Master Plan. The system currently being implemented was determined to be significantly more beneficial than any of the other options analyzed. In particular, the Master Plan determined that sewer separation was extremely costly, highly disruptive, and undesirable in that it would not address stormwater pollution. (In other words, it is obviously preferable to provide primary treatment to stormwater runoff than no treatment such as occurs with separate storm sewers.) In addition, the analysis performed as part of earlier permits demonstrates that providing either additional storage (to increase secondary treatment of stored wastewater) or additional secondary treatment capacity is both extraordinarily expensive and highly disruptive to the local community. The Board therefore concludes that no further wet-weather storage or treatment can be justified.

In addition, the permittee must demonstrate compliance with the requirements of 40 CFR 122.41(m)(4) for the bypass to be permitted. The bypass must be unavoidable to prevent loss of life, personal injury or severe property damage. For purposes of CSO permits, severe property damage includes situations where flows above a certain level wash out the POTW's secondary treatment system. See 59 Fed. Reg. 18694. Also, there must be no feasible alternatives to the bypass. For purposes of CSO permits, this provision is met if:

a. the secondary treatment system is properly operated and maintained;
b. the secondary system has been designed to meet secondary limits for flows greater than peak dry weather flow, plus an appropriate quantity of wet weather flow; and
c. it is either technically or financially infeasible to provide secondary treatment at the existing facilities for greater amount of wet weather flow.

Finally, the permittee must provide notice of the need for the bypass. This last provision is satisfied by the City's NPDES permit application describing the Southeast WPCP facilities and its wet-weather operation plans.

The Southeast WPCP can provide 110 MGD of secondary treatment, significantly greater than the average dry weather flow of 67 MGD. If the City attempts to provide secondary treatment to more than 110 MGD of flow during wet weather, the City risks washing out its biological treatment processes. (Also, there are physical limits on how much flow can be routed to the secondary tanks.) Increasing flow above 110 would result in serious property damage at the Southeast WPCP, as defined by the Policy. In addition, it would degrade treatment performance significantly until the biological treatment process could be reestablished. The Master Plan for the City's Bayside facilities and subsequent facility plans and environmental documents demonstrate the financial unfeasibility of providing more secondary treatment capacity for wet weather flows at the Southeast WPCP. Also, because secondary treatment relies on natural organisms (bacteria), the treatment plant is limited in how quickly it can increase treatment capacity to address wet weather flows.[5] Use of standby physical/chemical treatments is expensive and problematic. In

5 The bacteria concentration in the secondary treatment units must be "ramped up" gradually; in other

addition, the location of the Southeast WPCP is physically limited; expansion of the treatment works on site would require acquisition of private property.

Regardless of the regulatory approach for addressing the primary-only flows, the permit requirements are the same. The permit requires compliance with the flow-maximization objective of the Policy. In addition, the City is required to use the storage capacity in the storage/transports to maximize, to the extent feasible, storage of wet weather flows for later treatment during dry weather periods.[6] This requirement represents both a BCT and BAT control because it results in the removal of conventional, toxic and non-conventional pollutants.

5. *Prohibition of Dry-Weather Overflows:* Previous wastewater permits issued to the City have prohibited dry-weather discharge of untreated wastewater from the CSS. Even before the Master Plan construction program, the system was designed to hold and treat all dry weather flow. In addition, the storage/transports have enough storage capacity to contain several days of dry weather flow (during disasters or other major disruptions).

   The NPDES permit prohibits dry-weather overflows. This requirement represents both a BCT and BAT control because it results in the removal of conventional, toxic and non-conventional pollutants.

6. *Control of Solid and Floatable Materials in CSO Discharges:* As part of the nine minimum controls, this requirement is for relatively "low tech" pollutant control. EPA guidance notes, "Several simple measures can be used to remove solids and floatables from combined sewage before they reach the receiving stream. These include baffles, screens, catch basin modifications, and nets."[7]

   San Francisco assessed various technologies that could remove aesthetically objectionable materials that would otherwise remain on beaches or float on water surfaces after a storm. However, these technologies had little effect on suspended solids or bacterial loading of the overflows. Rotary screening provides only about five percent total suspended solids (TSS) removal, and swirl concentrators provide about 15 percent removal.

   The City's storage/transport system provides a substantially higher level of control of solid and floatable materials than proposed by EPA in its guidance. Smaller storms are completely contained and all flow directed to the treatment plants. When discharge does occur from the storage/transports to the shoreline, the combined wastewater has received flow-through treatment consisting of baffling to remove floatables and settling to remove solids. The solids are flushed to the treatments after the storm passes. A

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words, there is a maximum rate at which the bacteria population can be expanded to treat the additional wet weather flows.

6 The storage/transports provide capabilities beyond that identified for BCT/BAT in EPA's guidance.

7 Guidance for Nine Minimum Controls (EPA 832-B-95-003), page 7.1.

study was conducted to determine the solids removal efficiency of the Westside Transport.[8] The study concluded that the performance of the Transport was not markedly different from that of a primary treatment plant, providing between 15 and 50 percent removal of TSS; the baffling system was shown to retain the majority of the macroscopic floatable material that entered the Transport. Beach deposition of CSO floatables has therefore been largely eliminated.

Because the design of the facilities ensures continual consistency with this objective, there is no need for any additional permit requirement other than the standard NPDES permit conditions requiring proper operation and maintenance and prohibiting unnecessary bypass of treatment facilities. The baffled storage/transport represents both a BCT and BAT control because it results in the removal of conventional, toxic and non-conventional pollutants.

7. *Pollution Prevention:* Pollution prevention is source reduction and other practices that reduce or eliminate pollutants through the increased efficiency in the use of resources or the protection of resources by conservation. Two major source reduction efforts implemented by the City's BERM focus on reducing the pollutants released to the environment through the sewer system: (1) the development of an overall pollution prevention program and (2) the implementation of a wastewater waste minimization program as part of the pretreatment requirements. The City's proactive water pollution prevention and pretreatment programs, managed by BERM, minimize the introduction of toxic pollutants into the CSS. (The pretreatment program is discussed in greater detail under Item 3 above.)

   The City undertook a study of Best Management Practices (BMPs) to determine which would provide the most cost-effective reduction in pollutant loadings into the CSS during both dry- and wet-weather periods[9]. The most important pollutants of concern during wet-weather periods include PAHs, copper, lead, and cyanide. The main sources of these pollutants are automobiles and automotive-related businesses; other sources include tar shingles, wood preservatives, paints, algicides, and manufacturing.

   A key BMP is the City's street sweeping program, which directly reduces pollutants originating from street surfaces; all City streets are swept at least once per week with vacuum sweepers. Catch basins are also cleaned, as necessary, which helps to reduce pollutant loading during storm events. Other BMPs selected for implementation include a pollution prevention education program, provision of alternative disposal methods for residential hazardous waste, regulatory measures to reduce the risk of toxic spills, and public agency measures to prevent contact of rainfall runoff with potential contaminants.

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8 City and County of San Francisco, Department of Public Works. *Westside Transport Performance Evaluation Study, Final Report*, March 1991

9 James M. Montgomery, Consulting Engineers, Inc. *City and County of San Francisco, Department of Public Works, Best Management Practices Study*, August 1992

Table 2 illustrates the total estimated pollutant reduction that could occur from implementation of the City's source reduction strategies. Note that these are estimates, and reductions could increase if previously unknown pollutant sources are identified and targeted for source reduction strategies.

The NPDES permit requires the implementation and continual development of a Pollution Prevention Plan. This plan is subject to the review and approval of the Board. This requirement represents a BAT control because it primarily results in the removal of toxic pollutants.

Table 2 - Estimated Reduction of Toxics from Pollution Prevention Program

Targeted Pollutant	Estimated Reductions	
	lbs/dy	mg/l
Copper (Cu)	14.7	0.0027
Mercury (Hg)	0.16	0.0003
Lead (Pb)	3.7	0.007
Nickel (Ni)	1.9	0.004
Silver (Ag)	2.2	0.004
Zinc (Zn)	24.2	0.045
Cyanide (Cn)	0.87	0.0015

(Source: City and County of San Francisco, 1994 NPDES Permit Program, Attachment #1, Appendix A, page 6)

8 *Public Notification*: The City has several public notification procedures. Information signs discouraging water contact recreation after wet weather events are posted at all beach locations in San Francisco. When a CSO event occurs, the City posts NO SWIMMING signs at beaches in the vicinity of the overflow warning the public that waters may contain high levels of bacteria and may therefore be unsuitable for water contact recreation. Additionally, signs are posted if routine monitoring indicates high bacteriological levels. Warning signs remain posted until monitoring indicates that bacteriological levels are within acceptable levels. A recorded hotline provides current beach water quality and posting information on a daily basis. When beaches are posted, the message indicates that waters contain elevated levels of bacteria and that water contact recreation is not recommended. Beach water quality information and posting conditions are also made available on a daily basis on the internet at www.earth911.org.

Public notification is required by the permit. This requirement represents a BPT/BCT control because it helps prevent exposure to conventional pollutants (primarily bacteria).

9. *Monitoring to Effectively Characterize CSO Impacts and the Efficacy of CSO Controls:* The City has ongoing discharge, shoreline, and Bay monitoring programs. These include both routine long-term monitoring of overflows and receiving waters and special short-term studies undertaken to support development of CSO control strategies or characterize CSO impacts on beneficial uses. Shoreline samples are collected for bacteriological analysis three times per week along San Francisco Bay. Water and sediment sampling is routinely conducted in the Bay. Numerous special studies have been conducted since 1966, when the City first undertook an in-depth study of the CSO problem.

   During the last permit cycle (beginning 1994), San Francisco has conducted sediment sampling annually. Bay water sampling takes place twice per year. Bacteria monitoring currently takes place three times per week at 12 locations in the Bay. Monitoring results show that bacteria levels are elevated at shoreline stations following a rainfall event; particularly in areas with storm water drains, but generally return to background levels within one or two tidal cycles following the cessation of the event. The permittee is proposing that the frequency of bacteria monitoring be decreased to weekly at a reduced number of sites (seven).

   Water quality monitoring of overflows has been routinely conducted since 1983, when the City's first CSO control facilities became operational. Flow-weighted, storm-composite samples are collected using automatic samplers and analyzed for constituents including BOD, TSS, oil and grease, phenols, and metals; in recent years, total PAHs have been added to the routine analysis. Full-priority pollutant scans are run on representative storm-composite samples of a CSO one to two times per year. As new CSO control facilities came on-line, they were added to the monitoring program. Collected data are submitted annually to the Board (and U.S. EPA).

   The draft NPDES permit requires continued receiving water monitoring and sediment sampling of San Francisco Bay through the Regional Monitoring Program. This requirement will replace local monitoring by San Francisco, and represents both a BCT and BAT control because it helps the City, the Regional Board, and EPA to evaluate the efficacy of the existing controls to remove conventional, toxic and non-conventional pollutants.

II. BPJ Analysis of Treatment Beyond the Nine Minimum Controls

In Part I of this analysis, the Board has concluded that the nine minimum controls outlined in the Policy are appropriate as *minimum* BCT/BAT requirements. This is in conformance with the CSO Control Policy. Part I also described San Francisco's compliance with these nine minimum controls. In Part II, the Board performs a BPJ analysis on the Westside CSO system in order to determine whether additional technology-based controls, beyond the nine minimum, should be required in the NPDES permit. This analysis also looks at the related issue of whether BAT or BCT requires effluent limitations that provide for additional

pollutant removal through expansion of the existing storage/transports' capacity to store combined flows for later treatment.

A. Determination of Best Practicable Control Technology Currently Available (BPT) for Combined Sewer Overflows

For many industrial categories, the BPT limitations (as well as BCT and BAT limitations) have been promulgated as regulations (effluent guidelines). EPA has not formally promulgated technology-based limitations for CSOs and therefore the permit writer must use best professional judgement (BPJ) on a case-by-case basis to develop the appropriate limitations. The regulations specify the factors to be used by the permit writer (40 CFR 125.3(d)(1)):

(i) The total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application;
(ii) The age of equipment and facilities involved;
(ii) The process employed;
(iv) The engineering aspects of the application of various types of control techniques;
(v) Process changes; and
(vi) Non-water quality environmental impact (including energy requirements).

The key factor here is item (i), the comparison of costs and performance. Senator Muskie, one of the authors of the legislation that late became known as the Clean Water Act, noted:

> *The balancing test between total cost and effluent reduction benefits is intended to limit the application of technology only where the additional degree of effluent reduction is wholly out of proportion to the costs of achieving such marginal level of reduction for any class or category of sources.*[10]

In other words, Congress expected significant efforts toward pollutant control as a result of the BPT requirements. Costs for the construction of treatment facilities would be a limiting factor only if they were comparably much higher than experienced by similar industrial sources. However, very high costs for treatment characterize CSO controls. The costs of controlling CSOs are very expensive because CSOs are caused by large volumes of highly variable storm runoff that may occur at flow rates much greater than the flow rates of the dry weather sewage. Additionally, CSO control facilities are only used on an intermittent basis; they are idle most of the year. As a result of these two factors, costs per pound of pollutant removed for CSO facilities usually greatly exceed the comparable costs for other wastewater pollutant control measures. This is particularly true in San Francisco where rainfall generally occurs only during a six-

10 1972 Leg.Hist. at 170, cited in *Chemical Manufacturer's Association v. USEPA*, 870 F.2d 177 (5th Cir. 1989)

month period of the year at a rate of approximately 21-in. per year.

The high costs for CSO control and treatment have resulted in a long-term EPA policy of equating BPT with limited controls not involving significant construction. Consequently, CSO treatment facilities have been built only when necessary to meet water quality needs (i.e., required by water quality-based limitations rather than the BPT/BCT/BAT technology-based limitations).

Application of the Cost Factor to the Determination of BPT for San Francisco:

The determination of BPT requires an examination of the six factors listed above. Each of these factors is evaluated below:

(i) **The total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application;** (40 CFR 125.3(d)(1))
To determine if the benefits are reasonable compared with costs we can compare San Francisco Westside CSO treatment costs and benefits with sewage treatment plant costs and benefits. The dry weather pollutants entering sewage treatment plants and the pollutants discharged as CSOs are similar in nature and so a comparison can be made.

Table 3 includes cost data for two Bay area sewage treatment plants and for the San Francisco Westside combined sewer overflow control and treatment facilities. (Costs are expected to be roughly the same on the Bayside). Benefits of pollutant control are shown in terms of dollars per pound of suspended solids removed from the wastewater. The two sewage treatment plants (East Bay MUD and Contra Costa) treat the wastewater to the secondary level which is the technology-based minimum required by the Clean Water Act.

Table 3 – Costs per Unit of Pollutant

Facility	Suspended Solids (Unit cost for removal - $/lb)
East Bay MUD (1)	$ 0.26
Central Contra Costa S.D. (1)	$ 0.51
S.F. Westside CSO control facilities (2)	$ 10.78

Cost Assumptions for S.F. Westside CSO facilities

Tons per year of TSS Removed	676 tons
Required Storage	69 MG
Westside CSO Control Costs	$213,750,000
Expected CSO facility life	50 years
Assumed interest rate	6.5%
Capital Recovery factor	.0679139

Annual Costs	
Capital	$14,516,602
O&M (at 0.02 of Cap. Costs)	$42,750
Total	$14,559,352
Cost per pound of TSS removed	$10.78

(1) Lam, Johnson, Area Engineer, to John Wolfenden, Section Leader, *Internal Memo, BOD and TSS Cost Removal Data or EBMUD and CCCSD,* Regional Water Quality Control Board, San Francisco Bay Region, May 19, 1993.

(2) City and County of San Francisco, Department of Public Works, *Determination of BCT/BAT for Westside Permits,* September 17, 1993, Appendix A.

As shown in the table, based on suspended solids removal, CSO control costs as implemented on San Francisco's Westside are wholly out of proportion to the benefits when compared with comparable costs and benefits at local POTWs. Bayside costs are expected to be similar. Consequently, CSO control facilities as built in San Francisco could not be justified based solely on BPT technology-based requirements. Instead the justification for constructing treatment facilities must be (and was) based on water quality needs.

There are additional methods of evaluating CSO performance. However, suspended solids removal is a practical and useful factor to compare since most pollutants of concern occur as suspended solids and suspended solids by themselves can have detrimental effects.

Though analysis of factor 1 is sufficient to show that the measures employed by San Francisco exceed BPT, this analysis will also examine the other BPT factors:

(ii) The age of equipment and facilities involved; and (iii) The process employed; San Francisco began planning for wastewater facilities improvement in 1972, with the preparation of the first Wastewater Master Plan. Implementation of the Master Plan is now complete. The Master Plan evaluated three basic options for wastewater control: (1) constructing high-capacity wastewater treatment plants, (2) storing excess flows for later treatment, and (3) separating sewers. The City selected a combination of increased treatment capacity and large volume storage as the most cost-effective means of controlling water quality. The Board, EPA and other agencies concurred in San Francisco's analysis at the time the Master Plan was developed, and remain convinced that it represents the most cost-effective and environmentally protective strategy for addressing the City's CSO problems. Sewer separation was rejected because of high costs, the need to excavate every street in the City, and the failure of sewer separation to address pollution caused by stormwater runoff.

The City's storage/transports capture combined stormwater runoff and sewage for later treatment. Storm flows that cannot be stored pass over a weir and under a baffle prior to discharge; settleable solids and floatables remain in the box, and are

flushed to the treatment plant after the storm subsides. Thus, any combined flows discharged from the storage/transport structures receive primary-equivalent treatment, which removes essentially all macroscopic floatables and most settleable solids.

All combined sewage formerly discharged untreated to the shoreline is captured and treated because of the Master Plan construction program. The system's performance for a particular storm varies because of the dynamic nature of the interaction between the system and the characteristics and sequence of storm events. For example, the system might capture all flows during a relatively intense rainfall of short duration with no overflow, especially when the transport/storage structures are empty at the start of the storm; a storm event of similar intensity and duration, however, might result in an overflow if previous rainfall had partially filled the transports.

Wastewater systems are expensive to construct and maintain. Once the structures are in place, significant changes generally require major engineering and construction efforts. Consequently, EPA in identifying the nine minimum technologies, focussed on relatively minor modifications to enhance performance (e.g., increasing storage in existing facilities). San Francisco's program provided for the construction of significantly increased treatment and large storage structures around the periphery of the City. Consequently, this program exceeds the technology-based requirements.

(iv) **The engineering aspects of the application of various types of control techniques;**

During planning, the range of available CSO control technologies was essentially limited to four core technologies: storage basins, deep tunnels, swirl concentrators, and screening facilities.[11] These four technologies fall into two groups. The first group of CSO control measures, storage basins and deep tunnels, are implemented where receiving water quality impacts are of the greatest concern, and required levels of CSO control are consequently high. These technologies rely on the storage of excess CSO, with subsequent treatment at existing water pollution control plants, to achieve high pollutant removal rates and effective disinfection levels. The second group of CSO controls, swirl concentrators and screening facilities, are implemented to reduce settleable solids and floatables. These technologies are typically applied where receiving water quality conditions do not warrant high BOD/TSS removal. Sewer separation, a third type of CSO control strategy, is typically used by municipalities that have only a relatively small area served by combined sewers. Sewer separation also results in an untreated discharge from storm sewers.

11 U.S. Environmental Protection Agency. *Cost Estimates for Select Combined Sewer Overflow Control Technologies*, 1992. Page 1.

Storage Basins
Storage basins are typically concrete tanks located at overflow points or near treatment plants. This structurally intensive technology involves the capture and storage of CSOs, with subsequent treatment of captured flows. Combined flows that exceed the storage capacity of the basin may receive coarse screening, primary settling, floatable removal, and/or disinfection before discharge. Once flow capacity is available at the treatment plant, the stored volume is treated and discharged. This technology is very flexible because extremely variable CSO flows can be stored and treated, and high removal of BOD and TSS can be achieved[12].

Deep Tunnels
Deep tunnels provide consolidated storage in underground tunnels, from which the CSO is pumped to an existing treatment plant when capacity becomes available. Pollutant removal effectiveness is limited by the volume of the tunnel; CSO discharges that exceed the storage capacity of the tunnel typically do not receive treatment. Thus, the CSO that is stored in tunnels can receive a high level of treatment prior to discharge, but flows in excess of the tunnel's capacity typically receive no treatment.

Swirl Concentrators
The swirl concentrator is a specially configured gravity solids separator that retains floatables in the unit, passes concentrated solids to the sewer, and discharges the remaining flow to the receiving waterbody. The swirl concentrator can provide effective separation of floatables over a wide range of hydraulic loadings, while removing approximately 15 percent of suspended solids.

Screening Facilities
Screening of CSOs can be effective in removing large solids and floatables and is typically used in conjunction with other storage and treatment systems. The effectiveness of this technology is directly related to the size of the screen openings, which can vary from bar racks to coarse and fine screens and microstrainers. Screened materials are generally removed mechanically. Screening, a physical treatment process for CSO discharges, is usually applied when a high level of BOD/TSS removal is not necessary.

12 Ibid. Page 8.

Conclusion
Based on this brief review of available CSO control technologies, San Francisco's transport/storage facilities clearly provide the highest level of water quality protection available. Swirl concentrators and screening facilities can reduce floatables, but provide limited removal of BOD and suspended solids. Deep tunnels allow for a high level of treatment for combined flows that do not exceed its storage capacity, although combined flows in excess of tunnel capacity receive little or no treatment. In San Francisco's system, combined flows are either stored for later treatment when capacity becomes available at the treatment plant or are subjected to primary-equivalent treatment before discharge when transport/storage capacity is exceeded. This treatment provides the storage benefits of deep tunnels and storage basins, and a high rate of removal for BOD, TSS, floatables, and settleable solids that is not possible with deep tunnels, swirl concentrators, or screening facilities. Swirl concentrators and screening facilities reduce floatables and are correspond to the type of treatment and relatively low-level technology EPA has envisioned as appropriate for technology-based CSO control. San Francisco's program is water quality-driven and thus opted for a higher level of control.

(v) **Process changes;**
This factor only applies to point source discharges from industrial plants, because industrial plants can consider alterations to processes that affect wastewater quality and quantity.

(vi) **Non-water quality environmental impact (including energy requirements).**
See the following BAT analysis

BPT Summary
The construction of CSO control and treatment facilities cannot be justified based on the application of the BPT cost/benefit criteria to San Francisco's Westside System. This conclusion is consistent with the long-term policy of both EPA, Region IX and the Board which has been to base San Francisco's CSO permits (and resultant facility construction) on the need to achieve water quality standards. BPT does not require any additional measures beyond the six control measures outlined in the 1989 CSO Control Strategy.[13] The Permit contains effluent limitations that require proper operation of San Francisco's CSO facilities and thereby ensures that San Francisco will provide treatment in excess of that mandated by BPT requirements.

13 As discussed later, BCT and BAT considerations are used as the basis for the nine minimum controls specified in the CSO Control Policy.

B. The Determination of Best Conventional Pollutant Control Technology (BCT) for CSOs.

BCT applies to the following constituents of the combined sewer overflows: suspended solids, biochemical oxygen demand (BOD), oil & grease, pH, and coliform bacteria. BCT represents an incremental level of control beyond BPT for the specified pollutants. The first part of this analysis has shown that the current system surpasses BPT for CSOs. This portion of the analysis will determine whether the current system also achieves BCT or whether additional treatment is necessary. In addition, EPA's CSO Control Policy recommends consideration of certain technologies as potential bases for setting BCT effluent limitations. These are discussed in Section II.

The regulations specify the factors to be used by the permit writer to determine BCT:

(i) The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived;
(ii) The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources.
(iii) The age of equipment and facilities involved;
(iv) The process employed;
(v) The engineering aspects of the application of various types of control techniques;
(vi) Process changes; and
(vii) Non-water quality environmental impact (including energy requirements).

The determination of BCT requires an examination of the seven factors above. Each of these factors is evaluated below:

(i) **The reasonableness of the relationship between the costs of attaining a reduction in effluent and the effluent reduction benefits derived;**
This portion of the analysis could simply compare the costs of the current treatment with the effluent reduction benefits derived as was done in Table 3 above. However, since San Francisco built these facilities to meet water quality standards, the question arose with regard to Westside facilities as to whether any additional treatment could be justified by BCT. For example, would further conventional pollutant reductions brought about by increased storage (and therefore increased treatment) be incrementally low cost enough to pass the "reasonableness" test? The following analysis for the Westside therefore compares the most economical additional treatment necessary to further reduce conventional pollutants (i.e. suspended solids) with the cost of the increased treatment. The costs are expected to be roughly comparable on the Bayside.

Analysis of Increased Storage
To further reduce suspended solids, additional storage capacity would have to be

added to the current facility. When this analysis was completed for the Westside the City estimated that it would cost $2.35 for each additional gallon of storage (currently estimates are higher). If the portion of the wet weather decanted (i.e., not normally treated at the treatment plant) wastewater discharged through the Ocean Outfall was to first receive treatment at the Oceanside facility (60% secondary, 40% primary), an additional 69.6 million gallons of storage capacity would be needed. This facility enhancement would reduce suspended solids discharged to the Ocean by an additional 209 tons per year and would cost approximately $163.6 million or an amortized cost of $11.1 million per year. (Assuming a 50 year project life. 6.5% interest, and a 0.02% of capital costs O&M). This facility enhancement would thereby cost approximately $25/lb of TSS removed.[14] This cost is significantly higher than the POTW costs shown in Table 3 of less than $1/lb. Thus, the concept of additional storage and treatment fails the cost test and cannot be supported as BCT.

Analysis of Full Containment

Full containment of storm flow is not required under the CWA's BAT/BCT requirements or by the CSO Control Policy. In fact, "full containment" of CSOs is extremely difficult to achieve because of the nature of precipitation events and control options are usually defined stochastically (e.g., long-term average of 1, 0.2, or 0.05 overflows to the shoreline per year). For San Francisco's Westside permit, EPA and Board provided an assessment of costs.[15]

The following table shows the summary of the costs for the increased storage option for Westside storm flows (discussed in the section above and the full containment (defined as one overflow per year), which allow for secondary treatment of all combined flows.

As can be seen from the table, providing additional pollutant removal becomes increasingly expensive per pound of pollutant (suspended solids) removed. The costs are wholly out of proportion to other treatment costs, especially those incurred by POTWs as discussed in the next section. Therefore, additional (incremental) treatment cannot be justified on the basis of BCT (technology-based) considerations.

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14 City and County of San Francisco, Department of Public Works, *Memorandum from Michelle Pla, Planning and Control, to Shirin Tolle, Environmental Engineer, USEPA,* November 12, 1993, pp. 2-4

15 Fact Sheet - Attachment 2: *Determination of Technology Based Requirements for NPDES Permit No. CA0037681,* effective May 9, 1997

Table 4 – Assessment of Incremental Costs for Pollutant Removal Beyond That Achieved by Current Master Plan Facilities (Westside)

Stage	Annual Cost ($, millions)	Average TSS Discharged (tons/yr)	Average TSS Removed[a] (tons/yr)	Percent TSS Removal[a]	Increm. Cost of TSS Removal ($/lb)[b]
Pre-program Facilities[c]	—	3,800	—	—	—
Full Master Plan (1996)	46.5[d]	1,580	2,220	58	(10.8 - current cost)
Increased Storage Option	+11.1[d,g]	1,371	2, 429	64	24.8[f]
Full Secondary on Westside (1 overflow)	+57.2[d,e,g]	1,160	2,640	69	68[f]

a Total reductions compared to Pre-Program facilities.

b Divides total annual cost by pounds of TSS removed; other measures of water pollutant loading (e.g., BOD and toxic pollutants) also improve.

c Pre-program facilities represent the baseline for comparison of TSS emissions.

d Assumes a 50-year life, 6.5% interest rate, and O&M of 0.02% of capital cost.

e Excludes land acquisition costs for a 65 MGD treatment plant.

f For comparison, secondary treatment of wastewater costs approximately $0.26 per pound of TSS removed for the East Bay Municipal Utilities District and approximately $0.51 per pound TSS removal for the Central Contra Costa Sanitation District.

g Costs are in addition to those incurred in construction and operation of full master plan.

(ii) The comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources. The intent of this factor was summarized in *Chemical Manufacturer's Association v. EPA*:

> *Representative Roberts, the author of the conference report on the 1977 amendments, emphasized that the additional technology requirements of BCT were to be imposed only to remove additional "cheap pounds" of conventional pollutants beyond BPT.*[16]

Best conventional pollutant control technology (BCT) is intended as an incremental level of control beyond the best practicable control technology currently available (BPT). The intent of the requirement is to impose additional controls only if the additional removal of conventional pollutants is comparable to removal costs at POTWs. As shown in Table 3, however, the CSO control technology implemented by San Francisco is very expensive compared with POTW costs and therefore could not be justified under BCT. Other CSO treatment technologies, as listed in Table 5, are far more costly than POTW costs, and similarly cannot be justified.

16 *Chemical Manufacturer's Association v. USEPA*, 870 F.2d 177 (5th Cir. 1989), p. 205 citing Rep. Roberts in 1977 Leg.Hist. at 330

Table 5 – Pollutant Removal Costs Compared with POTW Costs

Control Technology		TSS Reduction (percent)	TSS Removal Cost ($/lb)
CSO Control[a]	Rotary Screening	5	46
	Swirl Concentrators	15	21
	High-Rate Filtration	20	17
	Sedimentation	33	6
Local POTWs[b]	East Bay Municipal Utilities District	85	0.26
	Central Contra Costa County Sanitation District	85	0.51
San Francisco	Westside Facilities	60	10.5

(Source: RWQCB, San Francisco Bay Region and the City of San Francisco)

a. The control technology costs in Table 5 are taken from the California Regional Water Quality Control Board BCT/BAT analysis as developed for NPDES CA0037681 (7/26/1990 final permit). The costs were originally developed by East Bay Municipal Utility District. Note that with the exception of sedimentation, these costs for partial treatment are significantly higher than the costs for full-scale CSO control as implemented by San Francisco on the Westside.

   The TSS Reduction and the corresponding TSS Removal Cost for the CSO Control technologies are calculated assuming that the stormwater/wastewater influent has not undergone any prior treatment. The TSS percent reduction would be significantly lower and the TSS Removal Cost would be significantly higher if one of these CSO Controls were added to the existing system which already reduces TSS by at least 60%.

b. POTWs in general have significantly lower treatment costs since they do not treat stormwater.

(iii) The age of equipment and facilities involved;
See BPT analysis above.

(iv) The process employed;
See BPT analysis above.

(v) The engineering aspects of the application of various types of control techniques;
See BPT analysis above.

(vi) Process changes;
Not applicable (the "product"- wastewater – cannot be changed.)

(vii) Non-water quality environmental impact (including energy requirements).
See BAT analysis below.

BCT Summary
Best Conventional Treatment applies to the removal of conventional pollutants (TSS, BOD, etc.). The viability of a potential BCT treatment is determined by comparing treatment costs with POTW treatment costs. The costs of the CSO facilities actually built by San Francisco, the costs of increased storage for later treatment, and the costs for other potential CSO treatment technologies all greatly exceed POTW treatment costs. Therefore, no additional treatment can be justified based solely on BCT. The permit contains effluent limitations that require proper operation San Francisco's current CSO facilities which provide treatment beyond that required by BCT. Therefore, these effluent limitations ensure that San Francisco will provide treatment in excess of that mandated by EPA's BCT requirements and additional effluent limitations for BCT are not needed.

C. The Determination of Best Available Technology Economically Achievable (BAT) for CSOs.

BAT requirements are requirements that go beyond BPT by specifying controls for two groups of pollutants: (1) toxic pollutants (e.g., copper, lead, zinc, polynuclear aromatic hydrocarbons [PAHs], pesticides, and other organics) and (2) non-toxic, non-conventional pollutants. For CSOs, floatables are the only non-toxic, non-conventional pollutant of concern. The following CWA regulations for BAT specify factors are used by the permit writer (40 CFR 125.3(d)(3)):

(i) The age of equipment and facilities involved;
(ii) The process employed;
(iii) The engineering aspects of the application of various types of control techniques;
(iv) Process changes;
(v) The cost of achieving such effluent reduction; and
(vi) Non-water quality environmental impacts (including energy requirements).

Since all wastewater receives at least primary treatment including baffling as it is

discharged, San Francisco's system provides substantial treatment for floatables. The Board and EPA have not been able to identify any treatment process that would significantly improve floatables removal, and so finds that baffling constitutes BAT for floatables.

To determine BAT for toxic pollutants (beyond the nine minimum controls discussed in section I), EPA (for the Westside permit) analyzed the existing San Francisco CSO containment and treatment system, and compared it to the regulatory requirements for BAT. In addition, the Clean Water Act requires EPA to promulgate effluent limitations requiring the elimination of discharges of all pollutants if EPA determines that such elimination is technically and economically achievable. CWA § 301(b)(2)(A). Therefore, EPA analyzed the technical and economical achievability of effluent limitations that would effectively eliminate San Francisco's CSO discharge.

The determination of BAT requires an examination of the six factors above. Each of these factors is evaluated below:

(i) **The age of equipment and facilities involved;**
See BPT analysis.

(ii) **The process employed;**
See BPT analysis. The City and County has also implemented a Source Control program which will significantly help to reduce toxic pollutants discharged by the public and industry. (See discussion in the Fact Sheet, Control # 7, Pollution Prevention.)

(iii) **The engineering aspects of the application of various types of control techniques;**
See BPT analysis

(iv) **Process changes;**
Not applicable. See discussion in BPT analysis.

(v) **The cost of achieving such effluent reduction;**
This item is a key issue for a BAT assesment. The high cost of CSO control has prevented many U.S. cities from providing treatment, even when water quality standards are being violated. The City's capital investment for water pollution control has been about $1,900 per person and would be substantially higher in current dollars. This level of investment represents one of the highest per capita investments for CSO control in the nation for a medium or large city. As noted earlier, this equates to approximately $10.8/lb of TSS removal. Roughly two thirds of this expense was dedicated to CSO control.

The application of the cost test in the BAT analysis is discussed by the court in NRDC v. EPA, 863 F.2d 1420 (9th Cir. 1988). The court concluded:

To demonstrate economic achievability, no formal balancing of costs and benefits is required; BAT should represent "a commitment of the maximum resources economically possible to the ultimate goal of eliminating all polluting discharges." EPA has considerable discretion in weighing the costs of BAT.... The Administrator should be bound by a test of reasonableness. NRDC v. EPA, 863 F.2d at 1426 , (citations omitted).

San Francisco has made an extraordinarily large investment in CSO control technology. This is consistent with BAT requirements to commit the maximum resources economically possible to the goal of eliminating pollutant discharges. However, without the associated water quality benefits that justified this investment, EPA and the Board would not conclude that this was a reasonable expense to require.[17] Therefore, the Board concludes that the existing level of storage and treatment for CSOs exceeds BAT requirements for toxic pollutant removals.

This, however, does not conclude the analysis of BAT. Given the existing treatment system, and the existing resource commitment, the Board has also examined possible mechanisms to improve reductions of toxic pollutants. This review is appropriate to determine whether it is reasonable to require additional steps to address toxic pollutants when considering the costs already incurred by the program as a whole and the incremental costs and benefits of potential improvements. Without such a review, cost-effective improvements to toxic pollutant removal could escape consideration simply because so much has been already spent. The toxic pollutant removal technology examined is increased primary and secondary treatment of all wastewater and stormwater, as well as toxic pollutant control strategies in EPA's CSO Control Policy (see Section I).

Analysis of toxic pollutant removal efficiencies through primary and secondary treatment (activated sludge).

For purpose of this cost analysis, additional primary and activated sludge treatment was selected as the most cost efficient toxic removal technology. This selection is based on a study of 40 POTWs. The study compares removal efficiencies through primary treatment, activated sludge (secondary), trickling filter, and tertiary treatment.[18] As was done before, the San Francisco Westside facilities are used as the example. Costs on the Bayside are expected to be in similar ranges. Copper, Lead, and Zinc were chosen for this analysis. Removal efficiencies for Copper, Lead, and Zinc are as follows:

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17 Based on EPA's promulgation of the CSO Control Policy, which equated BAT control for toxics and non-conventionals with the nine minimum technologies.

18 EPA Guidance Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program, December 1987, pp.3-55 - 3-58

Table 6 - Removal Efficiencies of Primary and Secondary-Level Treatment

Metal	Primary	Primary and Secondary
Copper (Cu)	22%	86%
Lead (Pb)	57%	61%
Zinc (Zn)	27%	79%

Site-specific wet-weather influent data for 1994 and 1995 was used. The most cost efficient means to increase the amount of wastewater that receives primary and secondary treatment is to increase storage capacity (as opposed to increasing treatment facilities).

Analysis of Increased Storage
Under this scenario (similar scenario as discussed under BCT above), the 1,280 million gallons per year (MGY) that currently is decanted (from the Westside storage/transport direct to the Outfall) would receive a combination of primary and secondary treatment. (An additional 40 MGY would receive primary and 1,056 (MGY) would receive secondary.) The remaining 184 MGY would be discharged to the shoreline. By multiplying these flows by the removal efficiencies for primary and secondary above (see Table 6), the reductions in loadings were calculated. Assuming an amortized $11.1 million yearly cost for the additional treatment, the cost/lb of removal was estimated.[19]

Table 7 – Unit Costs for Metals Removed by Additional Treatment (Westside)

Metal	% Reduction	$/lb removed
Copper	26%	$300
Lead	12%	$1,400
Zinc	21%	$100

Analysis of Full Secondary
By increasing the Westside storage capacity by another 108 Million Gallons, all stormwater/wastewater (except for the eight shoreline overflows) could receive secondary treatment (See Table 8). While this would further reduce the loadings of metals to the receiving water, the cost, of course, would increase significantly. (This scenario is not the same as the "Full Containment" Options discussed under

19 EPA Region 9, Memo to files from Doug Liden, Engineer, *Calculations of Metals Removal Achievable Through Additional Storage*, June 1, 1995.

the BCT Analysis. The scenario is cheaper because is assumes eight overflows per year, and therefore does not require additional treatment facilities.) The reduction in metals discharged was calculated. Assuming an amortized yearly cost of $28 million, the cost per pound removed was also calculated.[20]

Table 8 – Unit Costs for Metals Removed by Full Secondary Treatment (Westside)

	% Reduction	$/lb removed
Copper	37%	$500
Lead	12%	$3,700
Zinc	28%	$200

Both the Increased Storage and Full Secondary alternatives would achieve, at best, marginal reductions in toxic pollutant loadings (12% to 37%) at extremely high costs ($100 to $3,700/lb). These expenditures would be wholly unreasonable given their limited effectiveness.

(vi) Non-water quality environmental impacts (including energy requirements). Constructing the required storage facilities for full containment of combined flows (assuming one overflow per year) would require the construction of facilities much larger than the current facilities (both storage and treatment). Construction of additional storage would involve the excavation of many miles of City streets and would be extremely disruptive to local residents. Constructing an additional wastewater treatment plant in a densely populated city such as San Francisco would be extremely difficult, possibly involving the condemnation of private property. Neighborhood disruption resulting from construction on this scale would include street closure for up to one year for each site, dust and noise nuisances, potential vibration damage from the excavation and pile-driving equipment, and traffic disruption from truck deliveries and workers commuting to and from construction sites. Although land and property values would probably be unaffected in the long term, properties in the vicinity of construction activities would likely take longer to sell during the construction period than they would normally.

The fact that these extensive construction activities would occur in a densely populated city and adjacent to environmentally sensitive coastal areas was a consideration for designing and constructing the City's current Westside system to allow for an average of eight overflows per year, rather than one. In 1979, the SWRCB (with EPA concurrence) granted an exemption to the Ocean Plan that

20 Ibid.

allowed up to eight overflows per year on the Westside, partially due to the fact that the Coastal Commission had denied the City a required development permit based on one overflow per year, in part, because of the size and location of the transport necessary for a one overflow system.[21] The major increase in facility size that would be needed was judged to be too disruptive to the coastal area. Other concerns voiced by the Coastal Commission included future beach erosion, sewer exposure, seismic disturbances, and groundwater problems.

BAT Summary

BAT applies to toxic and non-conventional pollutants. Based on the guidance provided by the CWA, the costs of increased storage, along with the non-water quality environmental impacts, are excessive compared to the benefits provided, and this expenditure would be wholly unwarranted under BAT. The current treatment facilities therefore exceed the cost of treatment facilities that would be required under BAT.

Baysidebpj3.doc/2.27.02/fk-dl-fk

21 California Water Resources Control Board, Order No. WQ 79-16. Page 15.

Attachment F – Pretreatment Program Requirements

Attachment F to the NPDES permit: Individual permit pretreatment language

Pretreatment Program Provisions

1. The Discharger shall implement all pretreatment requirements contained in 40 CFR 403, as amended. The Discharger shall be subject to enforcement actions, penalties, and fines as provided in the Clean Water Act (33 USC 1351 et seq.), as amended. The Discharger shall implement and enforce their respective Approved Pretreatment Programs or modified Pretreatment Programs as directed by the Board's Executive Officer or the EPA. The EPA and/or the State may initiate enforcement action against an industrial user for noncompliance with applicable standards and requirements as provided in the Clean Water Act.

2. The Discharger shall enforce the requirements promulgated under Sections 307(b), 307(c), 307(d) and 402(b) of the Clean Water Act. The Discharger shall cause industrial users subject to Federal Categorical Standards to achieve compliance no later than the date specified in those requirements or, in the case of a new industrial user, upon commencement of the discharge.

3. The Discharger shall perform the pretreatment functions as required in 40 CFR Part 403 and amendments or modifications thereto including, but not limited to:

   i) Implement the necessary legal authorities to fully implement the pretreatment regulations as provided in 40 CFR 403.8(f)(1);

   ii) Implement the programmatic functions as provided in 40 CFR 403.8(f)(2);

   iii) Publish an annual list of industrial users in significant noncompliance as provided per 40 CFR 403.8(f)(2)(vii);

   iv) Provide for the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3); and

   v) Enforce the national pretreatment standards for prohibited discharges and categorical standards as provided in 40 CFR 403.5 and 403.6, respectively.

4. The Discharger shall submit annually a report to the EPA Region 9, the State Board and the Regional Board describing the Discharger's respective pretreatment program activities over the previous twelve months. In the event that the Discharger is not in compliance with any conditions or requirements of this permit, the Discharger shall also include the reasons for noncompliance and a plan and schedule for achieving compliance. The report shall contain, but is not limited to, the information specified in **Appendix A** entitled, "Requirements for Pretreatment Annual Reports," which is made a part of this Order. The annual report is due on the last day of February each year.

5. The Discharger shall submit semiannual pretreatment reports to the EPA Region 9, the State Board and the Board describing the status of their respective significant industrial users (SIUs). The report shall contain, but not is limited to, the information specified in **Appendix B** entitled, "Requirements for Semiannual Pretreatment Reports," which is made part of this Order. The semiannual reports are due July 31st (for the period January through June) and January 31st (for the period July through December) of each year. The Executive Officer may exempt a Discharger from the semiannual reporting requirements on a case by case basis subject to State Board and EPA's comment and approval.

6. The Discharger may combine the annual pretreatment report with the semiannual pretreatment report (for the July through December reporting period). The combined report shall contain all of the information requested in Appendices A and B and will be due on January 31st of each year.

7. The Discharger shall conduct the monitoring of its treatment plant's influent, effluent, and sludge as described in **Appendix C** entitled, "Requirements for Influent, Effluent and Sludge Monitoring," which is made part of this Order. The results of the sampling and analysis, along with a discussion of any trends, shall be submitted in the semiannual reports. A tabulation of the data shall be included in the annual pretreatment report. The Executive Officer may require more or less frequent monitoring on a case by case basis.

APPENDIX A

REQUIREMENTS FOR PRETREATMENT ANNUAL REPORTS

The Pretreatment Annual Report is due each year on the last day of February. [If the annual report is combined with the semiannual report (for the July through December period) the submittal deadline is January 31st of each year.] The purpose of the Annual Report is 1) to describe the status of the Publicly Owned Treatment Works (POTW) pretreatment program and 2) to report on the effectiveness of the program, as determined by comparing the results of the preceding year's program implementation. The report shall contain at a minimum, but is not limited to, the following information:

1) Cover Sheet

The cover sheet must contain the name(s) and National Pollutant Discharge Elimination Discharge System (NPDES) permit number(s) of those POTWs that are part of the Pretreatment Program. Additionally, the cover sheet must include: the name, address and telephone number of a pretreatment contact person; the period covered in the report; a statement of truthfulness; and the dated signature of a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for overall operation of the POTW (40 CFR 403.12(j)).

2) Introduction

The Introduction shall include any pertinent background information related to the City/ District/Agency, the POTW and/or the Industrial base of the area. Also, this section shall include an update on the status of any Pretreatment Compliance Inspection (PCI) tasks, Pretreatment Performance Evaluation tasks, Pretreatment Compliance Audit (PCA) tasks, Cleanup and Abatement Order (CAO) tasks, or other pretreatment-related enforcement actions required by the Regional Board or the EPA. A more specific discussion shall be included in the section entitled, "Program Changes."

3) Definitions

This section shall contain a list of key terms and their definitions that the POTW uses to describe or characterize elements of its pretreatment program.

4) Discussion of Upset, Interference and Pass Through

This section shall include a discussion of Upset, Interference or Pass Through incidents, if any, at the POTW(s) that the Discharger knows of or suspects were caused by industrial discharges. Each incident shall be described, at a minimum, consisting of the following information:

a) a description of what occurred;
b) a description of what was done to identify the source;
c) the name and address of the IU responsible
d) the reason(s) why the incident occurred;
e) a description of the corrective actions taken; and
f) an examination of the local and federal discharge limits and requirements for the purposes of determining whether any additional limits or changes to existing requirements may be necessary to prevent other Upset, Interference or Pass Through incidents.

5) **Influent, Effluent and Sludge Monitoring Results**

This section shall provide a summary of the analytical results from the "Influent, Effluent and Sludge Monitoring" as specified in Appendix C. The results should be reported in a summary matrix that lists monthly influent and effluent metal results for the reporting year.

A graphical representation of the influent and effluent metal monitoring data for the past five years shall also be provided with a discussion of any trends.

6) **Inspection and Sampling Program**

This section shall contain at a minimum, but is not limited to, the following information:

a) Inspections: the number of inspections performed for each type of IU; the criteria for determining the frequency of inspections; the inspection format procedures;
b) Sampling Events: the number of sampling events performed for each type of IU; the criteria for determining the frequency of sampling; the chain of custody procedures.

7) **Enforcement Procedures**

This section shall provide information as to when the approved Enforcement Response Plan (ERP) had been formally adopted or last revised. In addition, the date the finalized ERP was submitted to the Regional Board shall also be given.

8) **Federal Categories**

This section shall contain a list of all of the federal categories that apply to the POTW. The specific category shall be listed including the subpart and 40 CFR section that applies. The maximum and average limits for the each category shall be provided. This list shall indicate the number of Categorical Industrial Users (CIUs) per category and the CIUs that are being regulated pursuant to the category. The information and data used to determine the limits for those CIUs for which a combined waste stream formula is applied shall also be provided.

9) **Local Standards**

This section shall include a table presenting the local limits.

10) **Updated List of Regulated SIUs**

This section shall contain a complete and updated list of the Discharger's Significant Industrial Users (SIUs), including their names, addresses, and the reason why the SIU is classified as "significant." The list shall include all deletions and additions keyed to the list as submitted in the previous annual report. All deletions shall be briefly explained.

11) **Compliance Activities**

a) **Inspection and Sampling Summary:** This section shall contain a summary of all the inspections and sampling activities conducted by the Discharger over the past year to gather information and data regarding the SIUs. The summary shall include:

(1) the number of inspections and sampling events conducted for each SIU;

(2) the quarters in which these activities were conducted; and

(3) the compliance status of each SIU, delineated by quarter, and characterized using all applicable descriptions as given below:

(a) in consistent compliance;

(b) in inconsistent compliance;

(c) in significant noncompliance;

(d) on a compliance schedule to achieve compliance, (include the date final compliance is required);

(e) not in compliance and not on a compliance schedule;

(f) compliance status unknown, and why not.

b) **Enforcement Summary:** This section shall contain a summary of the compliance and enforcement activities during the past year. The summary shall include the names of all the SIUs affected by the following actions:

(1) Warning letters or notices of violations regarding SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements. For each notice, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

(2) Administrative Orders regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements. For each notice, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

(3) Civil actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements. For each notice, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

(4) Criminal actions regarding the SIUs' apparent noncompliance with or violation of any federal pretreatment categorical standards and/or requirements, or local limits and/or requirements. For each notice, indicate whether it was for an infraction of a federal or local standard/limit or requirement.

(5) Assessment of monetary penalties. Identify the amount of penalty in each case and reason for assessing the penalty.

(6) Order to restrict/suspend discharge to the POTW.

(7) Order to disconnect the discharge from entering the POTW.

12) **Baseline Monitoring Report Update**

This section shall provide a list of CIUs that have been added to the pretreatment program since the last annual report. This list of new CIUs shall summarize the status of the respective Baseline Monitoring Reports (BMR). The BMR must contain all of the information specified in 40 CFR 403.12(b). For each of the new CIUs, the summary shall indicate when the BMR was due; when the CIU was notified by the POTW of this requirement; when the CIU submitted the report; and/or when the report is due.

13) **Pretreatment Program Changes**

This section shall contain a description of any significant changes in the Pretreatment Program during the past year including, but not limited to: legal authority, local limits, monitoring/ inspection program and frequency, enforcement protocol, program's administrative structure, staffing level, resource requirements and funding mechanism. If the manager of the pretreatment program changes, a revised organizational chart shall be included. If any element(s) of the program is in the process of being modified, this intention shall also be indicated.

14) **Pretreatment Program Budget**

This section shall present the budget spent on the Pretreatment Program. The budget, either by the calendar or fiscal year, shall show the amounts spent on personnel, equipment, chemical analyses and any other appropriate categories. A brief discussion of the source(s) of funding shall be provided.

15) **Public Participation Summary**

This section shall include a copy of the public notice as required in 40 CFR 403.8(f)(2)(vii). If a notice was not published, the reason shall be stated.

16) **Sludge Storage and Disposal Practice**

This section shall have a description of how the treated sludge is stored and ultimately disposed. The sludge storage area, if one is used, shall be described in detail. Its location, a description of the containment features and the sludge handling procedures shall be included.

17) **PCS Data Entry Form**

The annual report shall include the PCS Data Entry Form. This form shall summarize the enforcement actions taken against SIUs in the past year. This form shall include the following information: the POTW name, NPDES Permit number, period covered by the report, the number of SIUs in significant noncompliance (SNC) that are on a pretreatment compliance schedule, the number of notices of violation and administrative orders issued against SIUs, the number of civil and criminal judicial actions against SIUs, the number of SIUs that have been published as a result of being in SNC, and the number of SIUs from which penalties have been collected.

18) **Other Subjects**

Other information related to the Pretreatment Program that does not fit into one of the above categories should be included in this section.

Signed copies of the reports shall be submitted to the Regional Administrator at USEPA, the State Water Resources Control Board and the Regional Board at the following addresses:

Regional Administrator
United States Environmental Protection Agency
Region 9, Mail Code: WTR-7
Clean Water Act Compliance Office
Water Division
75 Hawthorne Street
San Francisco, CA 94105

Pretreatment Program Manager
Regulatory Unit
State Water Resources Control Board
Division of Water Quality
1001 I Street
Sacramento, CA 95814

Pretreatment Coordinator
NPDES Permits Division
SF Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

APPENDIX B:

REQUIREMENTS FOR SEMIANNUAL PRETREATMENT REPORTS

The semiannual pretreatment reports are due on July 31st (for pretreatment program activities conducted from January through June) and January 31st (for pretreatment activities conducted from July through December) of each year, unless an exception has been granted by the Board's Executive Officer. The semiannual reports shall contain, at a minimum, but is not limited to, the following information:

1) **Influent, Effluent and Sludge Monitoring**

The influent, effluent and sludge monitoring results shall be included in the report. The analytical laboratory report shall also be included, with the QA/QC data validation provided upon request. A description of the sampling procedures and a discussion of the results shall be given. (Please see Appendix C for specific detailed requirements.) The contributing source(s) of the parameters that exceed NPDES limits shall be investigated and discussed. In addition, a brief discussion of the contributing source(s) of all organic compounds identified shall be provided.

The Discharger has the option to submit all monitoring results via an electronic reporting format approved by the Executive Officer. The procedures for submitting the data will be similar to the electronic submittal of the NPDES self-monitoring reports as outlined in the December 17, 1999 Regional Board letter, Official Implementation of Electronic Reporting System (ERS). The Discharger shall contact the Regional Board's ERS Project Manager for specific details in submitting the monitoring data.

If the monitoring results are submitted electronically, the analytical laboratory reports (along with the QA/QC data validation) should be kept at the discharger's facility.

2) **Industrial User Compliance Status**

This section shall contain a list of all Significant Industrial Users (SIUs) that were not in consistent compliance with all pretreatment standards/limits or requirements for the reporting period. The compliance status for the previous reporting period shall also be included. Once the SIU has determined to be out of compliance, the SIU shall be included in the report until consistent compliance has been achieved. A brief description detailing the actions that the SIU undertook to come back into compliance shall be provided.

For each SIU on the list, the following information shall be provided:

a. Indicate if the SIU is subject to Federal categorical standards; if so, specify the category including the subpart that applies.

b. For SIUs subject to Federal Categorical Standards, indicate if the violation is of a categorical or local standard.

c. Indicate the compliance status of the SIU for the two quarters of the reporting period.

d. For violations/noncompliance occurring in the reporting period, provide (1) the date(s) of violation(s); (2) the parameters and corresponding concentrations exceeding the limits and the discharge limits for these parameters and (3) a brief summary of the noncompliant event(s) and the steps that are being taken to achieve compliance.

3) **POTW's Compliance with Pretreatment Program Requirements**

This section shall contain a discussion of the Discharger's compliance status with the Pretreatment Program Requirements as indicated in the latest Pretreatment Compliance Audit (PCA) Report, Pretreatment Compliance Inspection (PCI) Report or Pretreatment Performance Evaluation (PPE) Report. It shall contain a summary of the following information:

a. Date of latest PCA, PCI or PPE and report.
b. Date of the Discharger's response.
c. List of unresolved issues.
d. Plan and schedule for resolving the remaining issues.

The reports shall be signed by a principal executive officer, ranking elected official, or other duly authorized employee who is responsible for the overall operation of the Publicly Owned Treatment Works (POTW) (40 CFR 403.12(j)). Signed copies of the reports shall be submitted to the Regional Administrator at USEPA, the State Water Resources Control Board and the Regional Board at the following addresses:

Regional Administrator
United States Environmental Protection Agency
Region 9, Mail Code: WTR-7
Clean Water Act Compliance Office
Water Division
75 Hawthorne Street
San Francisco, CA 94105

Pretreatment Program Manager
Regulatory Unit
State Water Resources Control Board
Division of Water Quality
1001 I Street
Sacramento, CA 95814

Pretreatment Coordinator
NPDES Permits Division
SF Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

APPENDIX C

REQUIREMENTS FOR INFLUENT, EFFLUENT AND SLUDGE MONITORING

The Discharger shall conduct sampling of their respective treatment plant's influent, effluent and sludge at the frequency as shown in **Table 3** on **Page 9 of the Self Monitoring Program.**

The monitoring and reporting requirements of the POTW's Pretreatment Program are in addition to those specified in the individual POTW's NPDES permit. Any subsequent modifications of the NPDES requirements shall be adhered to and shall not affect the requirements described in this Appendix unless written notice from the Regional Board is received. When sampling periods coincide, one set of test results, reported separately, may be used for those parameters that are required to be monitored in both the Discharger's NPDES permit and Pretreatment Program. Monitoring reports required by this Order shall be sent to the Pretreatment Coordinator.

1. **Influent and Effluent Monitoring**

The Discharger shall monitor for the parameters using the required test methods listed in Table **3** (page **9**). Any test method substitutions must have received prior written Regional Board approval. In addition, unless instructed otherwise in writing, the Discharger shall continue to monitor for those parameters at the frequency stated in Table 1. Influent and Effluent sampling locations shall be the same as those sites specified in the POTW's Self-Monitoring Program as set forth in its NPDES permit.

The influent and effluent sampled should be taken during the same 24-hour period. All samples must be representative of daily operations. A grab sample shall be used for volatile organic compounds, cyanide and phenol. In addition, any samples for oil and grease, polychlorinated biphenyls, dioxins/furans, and polynuclear aromatic hydrocarbons shall be grab samples. For all other pollutants, 24-hour composite samples must be obtained through flow-proportioned composite sampling. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto. For effluent monitoring, the reporting limits for the individual parameters shall be at or below the minimum levels (MLs) as stated in the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2000) [also known as the State Implementation Policy (SIP)]; any revisions to the MLs shall be adhered to. If a parameter does not have a stated minimum level, then the Discharger shall conduct the analysis using the lowest commercially available and reasonably achievable detection levels.

The following standardized report format should be used for submittal of the influent and effluent monitoring report. A similar structured format may be used but will be subject to Regional Board approval. The monitoring reports shall be submitted with the Semiannual Reports.

A. Sampling Procedures – This section shall include a brief discussion of the sample locations, collection times, how the sample was collected (i.e., direct collection using vials or bottles, or other types of collection using devices such as automatic samplers, buckets, or beakers), types of containers used, storage procedures and holding times. Include description of prechlorination and chlorination/dechlorination practices during the sampling periods.

B. Method of Sampling Dechlorination – A brief description of the sample dechlorination method prior to analysis shall be provided.

C. Sample Compositing – The manner in which samples are composited shall be described. If the compositing procedure is different from the test method specifications, a reason for the variation shall be provided.

D. Data Validation – All quality assurance/quality control (QA/QC) methods to be used shall be discussed and summarized. These methods include, but are not limited to, spike samples, split samples, blanks and standards. Ways in which the QA/QC data will be used to qualify the analytical test results shall be identified. A certification statement shall be submitted with this discussion stating that the laboratory QA/QC validation data has been reviewed and has met the laboratory acceptance criteria. The QA/QC validation data shall be submitted to the Regional Board upon request.

E. A tabulation of the test results shall be provided.

F. Discussion of Results – The report shall include a complete discussion of the test results. If any pollutants are detected in sufficient concentration to upset, interfere or pass through plant operations, the type of pollutant(s) and potential source(s) shall be noted, along with a plan of action to control, eliminate, and/or monitor the pollutant(s). Any apparent generation and/or destruction of pollutants attributable to chlorination/dechlorination sampling and analysis practices shall be noted.

2. **Sludge Monitoring**

Sludge should be sampled in the same 24-hour period during which the influent and effluent are sampled except as noted in (C) below. The same parameters required for influent and effluent analysis shall be included in the sludge analysis. The sludge analyzed shall be a composite sample of the sludge for final disposal consisting of:

A. Sludge lagoons – 20 grab samples collected at representative equidistant intervals (grid pattern) and composited as a single grab, or

B. Dried stockpile – 20 grab samples collected at various representative locations and depths and composited as a single grab, or

C. Dewatered sludge- daily composite of 4 representative grab samples each day for 5 days taken at equal intervals during the daily operating shift taken from a) the dewatering units or b) from each truckload, and shall be combined into a single 5-day composite.

The U.S. EPA manual, POTW Sludge Sampling and Analysis Guidance Document, August 1989, containing detailed sampling protocols specific to sludge is recommended as a guidance for sampling procedures. The U.S. EPA manual Analytical Methods of the National Sewage Sludge Survey, September 1990, containing detailed analytical protocols specific to sludge, is recommended as a guidance for analytical methods.

In determining if the sludge is a hazardous waste, the Dischargers shall adhere to Article 2, "Criteria for Identifying the Characteristics of Hazardous Waste," and Article 3, "Characteristics of Hazardous Waste," of Title 22, California Code of Regulations, Sections 66261.10 to 66261.24 and all amendments thereto.

Sludge monitoring reports shall be submitted with the appropriate Semiannual Report. The following standardized report format should be used for submittal of the report. A similarly structured form may be used but will be subject to Regional Board approval.

A. Sampling procedures – Include sample locations, collection procedures, types of containers used, storage/refrigeration methods, compositing techniques and holding times. Enclose a map of sample locations if sludge lagoons or stockpiled sludge is sampled.

B. Data Validation – All quality assurance/quality control (QA/QC) methods to be used shall be discussed and summarized. These methods include, but are not limited to, spike samples, split samples, blanks and standards. Ways in which the QA/QC data will be used to qualify the analytical test results shall be identified. .A certification statement shall be submitted with this discussion stating that the laboratory QA/QC validation data has been reviewed and has met the laboratory acceptance criteria. The QA/QC validation data shall be submitted to the Regional Board upon request.

C. Test Results – Tabulate the test results and include the percent solids.

D. Discussion of Results – The report shall include a complete discussion of test results. If the detected pollutant(s) is reasonably deemed to have an adverse effect on sludge disposal, a plan of action to control, eliminate, and/or monitor the pollutant(s) and the known or potential source(s) shall be included. Any apparent generation and/or destruction of pollutants attributable to chlorination/ dechlorination sampling and analysis practices shall be noted.

The Discharger shall also provide any influent, effluent or sludge monitoring data for nonpriority pollutants that the permittee believes may be causing or contributing to Interference, Pass Through or adversely impacting sludge quality.

Attachment G – Self-Monitoring Program Part A, August 1993

Attachment H – Standard Provisions and Reporting Requirements, August 1993

Attachment I – Board Resolution No. 74-10

Attachment J – August 6, 2001, Regional Board staff letter, "Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy"